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A TREATISE

ON

EPIDEMIC CHOLERA.

BY

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Jameson
on
Epidemic
Cholera

Custom seems to require that I dedicate this treatise to some illustrious patron; but in the present case this could only be done invidiously, since it comes before the public under the auspices of several hundred subscribers. I delight to recall the many flattering receptions, and warmly expressed good wishes of prominent members of our noble profession. The fraternal impulses, which adorn the members of the medical faculty, have more than lightened my labors;—while they have stimulated me onwards they have heightened my esteem for our noble calling.

ERRATA.

Page 37, 2d line from top, for ʒij. read ʒij.
" 51, 3d " " " for *half pound* read *half an ounce.*
" 78, 3d " " bottom. for *of* read *to.*

INTRODUCTION.

It has been our design to make the present work eminently practical, while we at the same time impress upon it the character of an American work. It is the clinical department we would endeavor to improve. The minutiæ of the closet, whether appertaining to animal chemistry, or pathology, though highly ornamental in our profession, can only be located among things that are dead. Careful observation upon bodies that are alive, must ever be the guide to him who would scan the phenomena which prevail in the morbific actions of the animal body.

In strict language, things are not forces, neither are forces things. The marks of lœdentia are seen upon the dead, but the keeping power is gone; we may analyze all that remains, but there is too often no key to unlock the mysteries of unsound life. Life consists of things and forces; in the dead the forces are extinct. Hence it is that we must get the living signs of disease, not the dead.

Analytically, much has been done, but synthetically, our powers are poor indeed. Much may be done to adorn the science of medicine, and much light has been thrown upon the nature of many diseases by the study of pathology; but unfortunately, what we desire to control is not to be got at, and it turns out, too often, that things visible after death, do not present the disease, but the result of the morbid actions; and as there is no resuscitation of the whole dead body, so neither is there any power of replacement of vital parts, that have lost their vital influence.

We claim to be practical, we therefore proceed to announce that, we have aimed to established the non-contagiousness of

cholera, believing the opposite opinion both erroneous and replete with evil to society. In doing this, we have endeavored to explain the nature of the cause of epidemic cholera.

Our therapia will be found differing in some measure from that that has been generally recommended, and, we think, sufficiently tested to be relied on, wherever it can be applied under like circumstances. We also consider our specialities of much importance, as the treatment was mostly successful, and the reader can rely upon our strict adherence to the truth, nor have we reserved unfortunate cases that were under strong and special treatment. The minor defects, we indulge the hope will be overlooked.

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TREATISE ON EPIDEMIC CHOLERA.

OBSERVATIONS ON MORBIFIC CONSTITUTIONS.

Since the day of Dr. Sydenham it has been known that epidemic diseases are under certain laws, though to our limited apprehensions they have not been sufficiently manifested to enable observers, the most astute, to reduce our knowledge to systematic arrangements; nevertheless, what we do know is highly important. It is one of those things which is recognized by its visible operations or effects, while its tangibility eludes our visual powers, except, as through a glass, darkly.

We may look to Sydenham for the first clear exposition of the laws governing epidemic diseases, and we now turn to his observations on epidemics, with especial reference to *epidemic constitutions*. This author tells us, "that the seasons of the year which chiefly favor any kind of diseases are necessary to be observed." "I have, indeed, wondered that this disposition of some diseases, which is so obvious, has as yet been observed by few." This important observation of Dr. Sydenham which, it appears, was but little attended to by his predecessors or cotemporaries, has been duly appreciated by a large proportion of the profession of the present century, and for this we are principally indebted to Dr. Rush. The term constitution, as referable to diseases, has been modernized into cycle.

We would here pay a merited tribute of respect to the memory of the father of the present writer, who (the father) graduated at the University of Edinburgh in the day of the

elder Monro, was fellow-student of the lamented General Mercer, who fell at Princeton, and they were fellow-emigrants to this country. Dr. Jameson practised physic at York, Pa., nearly forty years, and acquired pre-eminence in his profession. He was a strict proselyte and follower of Sydenham, as relates to fevers of the several seasons, which, indeed, constitutes nearly the whole professional business of country physicians. Like his prototype, he studied the character of fevers, &c., as he proceeded from year to year, and from season to season; and when, by the observance of a few cases, he saw the peculiar cast of cases present, he, from day to day, put into his day-book, "fever of the season." And we have had reason to feel truly thankful for early lessons, which have served as a beacon by which we have been guided, and, as it has become more familiar, has become more precious in our sight. This guide and instructor enabled us early to discard or mistrust nosology, and to be wary in paying too much devotion to pathological theories.

Speaking of certain epidemics, Sydenham says, "This I am sure of by many observations, that the above-mentioned diseases, especially fevers, do very much differ; for that method which is successful one year may, perhaps, be destructive another." The neglect of this admonition has involved doctrines respecting epidemics in much obscurity. Our author, speaking of his pains to observe the particular changes of the weather upon epidemics, says, "I perceive that years that agree as to the manifest temperature of the air are infested with various diseases;" "and thus it happens that there are many constitutions of years, that arise neither from heat, nor cold, nor moisture, nor drought, but proceed from a secret and inexplicable alteration in the bowels of the earth, whereby the air is contaminated with effluvia, as dispose to this or that disease, as long as the same constitution prevails." "Every one of these constitutions is accompanied with a fever proper and peculiar to itself." We need scarcely stop here to tell the reader that these supposed effluvia from the bowels of the earth, which are the cause of many of our fevers, are now almost universally recognized under the names of miasm, or

malaria; but atmospherical constitutions are comparatively secret and inexplicable.

In support of the method of Sydenham, as relates to epidemical constitutions of the atmosphere, and in opposition to nosology, or a too exclusive employment of pathological theories, he says, "There are other years which, though they be epidemical, yet are they so irregular that they cannot be comprehended under any one form, and are indeed ill-conditioned." Ample experience confirms these views of our author; and we shall see, as we proceed in our observations upon epidemic cholera, that it has presented strong features of this trait. Sydenham says again: "Diseases may vary often in one and the same constitution, which is of so great consequence, that the curative indications are to be omitted, or used according as the disease is disposed." The writings of Dr. Sydenham fully establish this important truth; and we have a strong illustration of it in Dr. Rush's account of the yellow fever of 1793 in Philadelphia; and it is quite in accordance with our own experience.

Sydenham has remarked, that "when autumnal intermittents appear in July, they do not always put on their own peculiar symptoms; and that we must carefully distinguish intermittent fevers from continual fevers, which they resemble." Again, it is said: "When many diseases infest the same year, one is more predominant, and all the rest are, as it were, under it, and don't rage so much at that time." Subsequent observation has confirmed this opinion. This must have a strong bearing on our practice, since all the diseases cotemporaneous with the main disease, but of inferior force, will principally partake of the character of the predominant disease. Sydenham has therefore correctly said, "Diseases which have been called putrid, malignant, spotted, and the like, ought rather to be named after the constitution." The peculiar constitution will give rise to specific antecedent causes, that will more or less govern all diseases of the epidemic kind.

"Seeing that the specifical differences of popular diseases, viz., fevers from secret constitutions of years, those labor in vain who deduce the reasons of divers fevers from a morbific

cause reserved within the body." These remarks are no less true now than they were in the time of Sydenham. They apply equally well to the cerebral theory of Clutterbuck, and that of the tubular viscera of Broussais. The author before us continues: "But, how shall we give an account of the distinct species of epidemics that do not only (at least so it appears to us) invade by chance, but for one year, or one certain series of years, are of one genus, and in another year are distinguished in species one from another? Why, in this case, no method seemed more fit to me than that which describes them, in the order they may succeed one another, for a sufficient number of years, which, that I may do according to my own method, I will first fully deliver to the learned world the histories and cures of these epidemics (as well as I could possibly collect from the most accurate observations) that did rage from the year 1661 to 1684."

Does not the fact that system after system of nosology has fallen into ruin, since the time of Sydenham, add support to the accuracy of his views generally, as relates to epidemic diseases? We think the latest observations and experience sustain his views; and it is by the atmospherical constitutional plan, as relates both to theory and practice, that we can safely engraft pathological views, and pursue successful modes of treatment.

Dr. Sydenham describes six different constitutions, which embrace the epidemic and febrile diseases, of which he treats. The first *constitution* began with 1661, and ended in 1665. The second embraced one year, from 1665 to 1666; during this period the principal disease was of a typhoid character; but more inflammatory than that of the preceding constitution: in this constitution, it will be recollected, raged the great plague of London. A third constitution existed from the termination of 1666 to 1669. The epidemics of this period were distinguishable, in part, by the unusual pernicious effects attending the use of stimulants. The fourth constitution included a part of the year 1669, and extended to the year 1672. During this term, dysentery was the most prevalent form of disease; but it is evident that diseases of this constitution were

of a low grade, since opium was found of such high importance as to draw from our author the strongest possible praise. The sixth constitution extended through the years 1673, '4 and '5. In this constitution diseases were now again of a decidedly inflammatory character, yet they yielded readily to the bark, after moderate evacuations. This epidemic seems to have been of milder grade than those of preceding constitutions,—depending, no doubt, on common miasm, of like nature with that which has, in former years, operated as the remote cause of our intermittent and remittent autumnal fevers, through our Middle and Southern States.

We think the foregoing observations and views (first clearly) promulgated by Sydenham, and cherished and amplified by Rush, afford a platform on which to rest whatever knowledge we have acquired respecting epidemics, and, in an especial manner, applies to cholera; and, equally so, in its sporadic, endemic, or epidemic aspects. And it is our decided opinion, that the atmospherical constitution, which begets cholera, throughout this and European countries, has existed ever since the year 1832: in some parts of Europe longer.

We do not mean to say that cholera is more under the influence of a reigning constitution than other diseases, such as have prevailed in this country since its settlement; but it seems proper to say, that the cholera constitution has, in some degree, usurped that of our miasmatic fevers. In both constitutions there are changes and modifications; and hence the truth of Sydenham's observation, "there are other years which, though they be epidemic, yet are they so irregular that they cannot be comprehended under any one form, and are indeed ill-conditioned." This accounts for the irregular blending of ordinary bilious fevers and cholera, prevailing in different parts of our country at one and the same time. All this, however, does not invalidate what we have offered in support of *atmospherical constitutions*, which rise up, and have their periods of advance, duration, and declination.

And it is for want of attention to this view of epidemic diseases, and particularly cholera, that some of our profession are in doubt; and some others, with a large portion of the

populace, believe cholera to be contagious,—an error of opinion this, that, it seems to us, to be almost a waste of words to attempt to disprove. As we proceed, we shall, however, offer observations on this point,—a point which we deem a matter of momentous importance, since much mischief is continually growing out of this error. Cholera, not being long stationary, but showing itself now here, now there, is thus, to each neighborhood, kept in good degree a stranger; and coming with destructive force, place after place is panic-struck for a period of more or less time, and many things thus arise to increase the mortality, and frighten the people, as well as some physicians, from their propriety, in whatever relates to the disease.

With a view of placing this part of our subject before the profession of medicine, we shall endeavor to unfold such observations and views, concerning epidemic cholera, as we believe are tangible and true; and if so, may serve to elucidate a subject which has perplexed many observers; and if it should, after all, turn out that this disease will have its victims, when seized on, we shall know better how to ward it off; and, to see things in their true character, is at least the beginning of knowledge; then let us here, as in other departments of knowledge, endeavor to gain power by inquiry into whatever appertains to the cause and nature of epidemic cholera, and we hope thence to derive such views as will lessen the destruction to human life; in doing which, it will appear that if many die of cholera, fewer now die of other diseases during a cholera constitution of the atmosphere.

OBSERVATIONS ON EPIDEMICS.

There is nothing related to cholera of so much importance as to point out and establish its antecedent cause; but we must have its whole character; for, by a right understanding of its protean character, we may, in good degree, keep it in obeisance. We, therefore, deem it proper to notice some of the epidemic constitutions which we have seen in the course of our practice, in different parts of this country.

We shall first notice an epidemic which prevailed at Wheeling, on the Ohio, in 1799 and 1800. From our records of this disease, we present the following remarks: "The season, the location, and the like circumstances, will enable us to anticipate, with tolerable certainty, at the beginning of an epidemic, whether we shall have a bilious cast of the disease, or whether there will be a predisposition to inflammation or congestion of this or that viscus; as the lungs, intestines, &c. To these circumstances we must always look in laying down our indications. We have seen several summer typhus epidemics, in all of which intermittents had preceded, or prevailed more or less cotemporaneously, and mostly some remittents also. Where the prostration was not remarkable, and some tolerable degree of excitement existed, bloodletting, to moderate extent, was useful, and in a very few cases one or two repetitions were practised to advantage. When the fever seemed to yield, and much prostration began to succeed, the respiration became more disturbed, and there was greater evidence of sensorial disturbance, it became necessary to exhibit preparations of ammonia, sp. nitre, sulph. ether, opium, serpentaria, &c. In some protracted cases, where there was a gradual sinking of the vital powers, at the end of the second or third week, a little sooner or later, life seemed to depend on the use of stimuli; almost incredible quantities of wine and brandy were necessary. In some cases a pint of each was given every twenty-four hours, for many days, with the happiest effects, and sometimes carried patients through many days of almost total insensibility, and a total want of consciousness, though of temperate habits. In these protracted cases, durable stimulants or tonics were found useful. The bark, in decoction (no quinia then) was especially beneficial.

Where there was evidence of unequal excitement, blisters were decidedly useful. But their effects being transient, and the disease one of considerable duration, it was necessary to re-apply them frequently; this was done as soon as they dried up pretty well: two or three were applied at a time, to the amount sometimes of ten, twelve, and even twenty.

It was a remarkable feature in this epidemic, that, in its

early stage, the stomach was very irritable, and a source of great suffering. This symptom was most readily relieved by small doses of calomel, and the application of mustard to the epigastrium and the ankles; and yet when the disease became protracted, this symptom disappeared, and medicines and drinks were received kindly. The sensorium was so much affected as to preclude the use of food, and patients were thus safe from officious friends, who too often interfere with our patients. In a few cases it required an extraordinary degree of determination of purpose, and a good share of management, to get down such medicines and drinks as the patients required. We saw a few patients who lay several days entirely unconscious of everything around them, not even recognizing the hand that administered to their wants, who nevertheless recovered. We aver truly, with high satisfaction, that, notwithstanding we treated many cases, none died in our hands.

The phenomena attendant on this disease, shows it to have been a typhus of simple grade as its prevailing cast; it had been preceded the year before by a fatal typhus, and the fever under notice was succeeded by remittent and intermittent fevers for several years, which were the product of miasm, arising from marshy exhalation. During the constitution under notice, say of 1799 and 1800, there was a few cases of the usual remitting and intermittent fevers.

We close our observations on this epidemic by noticing an occurrence which we deem important: there was a competitor in practice in Wheeling, in our time there, who was a good deal older, and who had much more experience, and from him we received our principal views of the disease, and of its treatment, and yet our practice was far more successful than his, for he lost several patients. Our practice differed in nothing but this: we used our remedies to much greater extent than he did, carefully adapting them to the stage and force of the disease, by a faithful investigation, morning, noon, and evening, where the location of the patient admitted of it, and they were nearly all in town. It seems proper that we should mention here, that with some of our patients wine could not be procured. In such cases, we used whiskey with equal success.

EPIDEMIC TYPHUS FEVER IN BALTIMORE.

We attended many cases of typhus fever in the year 1819, which presented the simple form as its prevailing character. In this epidemic there was not, generally, any considerable excitement; and, in some cases, there was not any observable, excepting increased heat of the skin. The stomach was often very irritable; indeed, this was one of the most uniform and distressing symptoms. Pretty nearly the same treatment was employed here as in the epidemic we have noticed as prevailing in 1799 and 1800; but it was not found proper or safe to carry remedies to the same extent, and especially we found a decided difference as regarded the use of blisters; they did not seem to be so useful as they were in the fever of 1799. Although it was, in the main, simple typhus, it was more fatal than the fever of the constitution of 1799.

The typhus and typhoid grades of fever were prevalent in Baltimore about the year 1819, and for some years previous; but the stomach being much concerned, and the views of Broussais being then in vogue, it went, perhaps, generally by the name of gastric fever. The cases, now under especial notice, existed at the Baltimore Jail, while we held the appointment of physician to that institution, and it had a duration of about eighteen months. At a time that there was nothing new or remarkable in the building, food, or anything else, this fever broke out, *and was continued all its term in one wing of the premises only. It existed in all the seasons nearly the same, being a little more common in the winter season.* It suddenly disappeared in the month of March, without any known cause, after having afflicted about forty persons during the preceding winter. After this our diseases became more openly bilious, and a *constitution* set in for about three years, in which yellow fever prevailed, in districts of alluvial soil in Baltimore, twice as an epidemic.

BILIOUS EPIDEMIC OF 1804.

All who are old enough will recollect that a bilious epidemic prevailed, to a most extraordinary extent, throughout the Middle States, in the year 1804. In that year, along every stream of water, and in low places, there was to be seen whole families of ten or twelve persons, in some instances, ill of this fever. The mortality was moderate, although bilious remitting fever was more common than the intermittent. The disease was what we would term, simple bilious fever, or disease, the result of the common miasm or marsh effluvia. And in this, as in all other epidemics, the character was best known by the treatment to which it yielded. We saw much of the disease, and found our practice alike simple and successful. The bark could be used efficiently in remittents, without much regard to remissions of the fever, after evacuating the first passages by the use of calomel and jalap, followed, in some cases, with an emetic of tart. pot. et ant. or ipecacuanha. The disease existed several weeks; and such was the general use of the cinchona, that it rose in Baltimore to four dollars a pound for the pale and yellow, and six for the red sort. It seems proper to remark here, that the bark, as it was then called, had not been analyzed, and the profession were in error as to the superiority of the red bark, owing, perhaps, to its greater astringency; this, and perhaps its comparative scarcity, led, we suppose, to the high price. But we were assured by a respectable apothecary that druggists were in the habit of counterfeiting the red cinchona by means of tincture of red saunders. Later experience shows the fraud only applied to the price, since the other varieties of bark contain more quinine than the cinchona rubra. Would that all adulteration were as innocent.

Let us here ask the broad question, can there be any difficulty in comprehending what is meant by an *atmospherical constitution* or cycle? Here is not only presented an extraordinary amount of disease, but there is a sameness of character which could not be explained on any ground except that of atmospherical contamination. This, though widely diffused,

was manifestly more concentrated and active along water-courses, where it is more or less evident by its effects every summer and autumn.

If we admit the position which we have taken to be true, and if, in the course of years of observation, we find diseases presenting different characteristics in the seasons when and where miasmatic diseases have heretofore prevailed, there can, we think, be no doubt but the new disease is occasioned by some contamination of the air somehow modified. Since the time of Lavoisier and Fourcroy, it has been known that chemical agents, in most instances, in entering into new combinations, unite only in definite proportions. And it follows, that the same elementary particles, uniting in different proportions, form different compounds—primary and secondary, &c., and these compounds will be quite different in their nature. Suppose we have ascertained that the effluvia of marshes can be shown to consist principally of ozone; this will show that miasm from vegetable putrefaction has heretofore given rise to our ordinary fevers in the fall season. We have here a cause, and the result of that cause is bilious disease of different grades; but, while the same materials, which produce the ozone, remain, and without any *visible cause*, the place of bilious fever is usurped by a new disease, are we not warranted in drawing the conclusion that the poison in the air has changed? And if so, are we not also warranted in believing that the change is owing to a new combination. We see that the same elements may, and do, as a regular law, produce different compounds, &c., &c., and nothing is better known than that these compounds may be most decidedly different We shall endeavor hereafter to show a new principle extant in the air.

It seems to follow, that however exalted the achievement of the chemist, in bringing to our cognizance the product obtained from malaria in the form of ozone, still little is achieved as regards our therapia. Here we may see that ozone produces ordinary fevers; but we cannot admit that exactly the same substance will produce cholera, yellow fever, &c., at least not epidemically; then we must have different qualities of ozone,

or a new principle in the air we breathe, and its presentation, in a practical view, is worth little or nothing. But admit that there is one poison only, and that that is ozone, how will this quadrate with what we so clearly see, that divers seasons, years, and terms of years, have always, as in the time of Sydenham, Lancise, and Rush, presented to our notice intermittent, remittent, typhus, and yellow fever, so variant, that almost every epidemic requires some alteration in our plans of treatment.

Much opportunity for observation in different parts of our country, with an eye, we think, never blinded by prejudice, has wedded us more and more to the views of Sydenham, when he says, "This I am sure of by many observations, that the above-mentioned diseases, especially fevers, do very much differ; for that method which is successful one year may, perhaps, prove destructive another." "I perceive that years that agree as to the manifest temperature of the air, are infested with various diseases." "And thus it happens that there are many constitutions of years that arise neither from heat, nor cold, nor moisture, nor drought. The air is contaminated with effluvia as dispose to this or that disease, as long as that constitution prevails." "Every one of these constitutions is accompanied with a fever proper and peculiar to itself." "There are diseases which, though they be epidemic, yet are they so irregular that they cannot be comprehended under any one form, and are indeed ill-conditioned." "Diseases may vary in one and the same constitution, which is of so great consequence, that the curative indications are to be omitted or used according as the disease is disposed." "Where many diseases infest one year, one is more predominant, and all the rest are, as it were, under it, and don't rage so much at that time." "Diseases which have been called putrid, malignant, spotted, and the like, ought rather to be named after the constitution." This leads to the important conclusion, that since cholera has infested our country, from point to point, that there has been a choleraic constitution existing since the year 1832; and hence we derive the opinion, that our diseases, though somewhat erratic, are ruled more or less by a choleraic

fomes, or perhaps an occult principle. We shall show, as we proceed, that it appears in forms which may be properly called *cholerine and cholero-dysentery*, and malignant cholera, or rather *cholera lethalis;* but we mean by these terms one and the same morbid influence, differing in force, and the stage of the disease, each form or stage having its own peculiar symptoms; all which we shall endeavor to point out and illustrate in these sheets. Our notice of the epidemic of 1804 will be extended.

FOMES OF CHOLERA AS AN ANTECEDENT CAUSE.

The fomes of cholera shows itself now here now there, presenting, unfortunately, a diversity of character which renders it difficult to adopt a successful practice; but we believe there is but one governing principle. A great desideratum is gained if we can satisfy ourselves that one of the most characteristic features of this disease is that it appears in hundreds of cases of cholerine and cholero-dysentery, where we see one terminate in the malignant form. A proper understanding of this part of our subject would relieve the public mind from the horror and fear that attends outbreaks of the disease in its aggravated form. And it ought not to be lost sight of, that if many have fallen victims to epidemic cholera, many of these would have died of other diseases, especially bilious fevers, since cholera prevails most in locations where such fevers usually exist in the summer and autumnal seasons. There is good reason to believe that cholera is but a misplaced bilious fever, according to Dr. Rush; or according to Dr. Sydenham, "a fever turned inwards (and to use his own words) upon the guts," and one in which there is not present the "symptoms proper to the disease."

Cholera, doubtless, makes its inroads upon the chylopoietic viscera, and exerts especial force on the alimentary tube; here it incubates, and, we believe, in many cases for long periods, crippling the digestive functions first, and oftentimes passing away unknown, where there is great regularity of living in all respects; in other cases, giving rise to more or less diarrhœa,

sick stomach, flatulency, &c., and is now easily cured. We are here reminded of an observation of Richerand, who says, that "man, in the abstract, may be considered a tube, open at both ends." It is clearly the laboratory of the supplies of life, and it may readily be believed that when this laboratory is laid waste, or all its fixtures tarnished, cracked, and broken, unwonted products will accumulate, and break up the works that are proper and necessary to be done. A healthy economy carries things onwards, and proper supplies are carried to their several destinations; but arrested as they now are, abnormal changes take place, and, while appalling sufferings are going on, destruction of the vital fluids and of their associated sensorial agents, comes over its victim, and the deadly work is finished by a retrograde movement of the impaired blood, and other plastic fluids, into the great tube of life; and as the serum of the blood pours into the bowels, there now comes to the aid of the morbid train endosmose and exosmose, to aid in pouring out the plastic serum, we believe, throughout all the tissues. This is the most common state of things; but it must be admitted other changes take place, and death becomes enthroned in the brain. Or we have killing spasms, or congestion, or collapse of the brain, or polypous concretions take place in the blood, especially in the heart, also carbonization of the blood in the arteries, &c., besides urea in the blood.

Hoping that we have made ourselves understood in our observations and views respecting epidemic cholera, and thereby removed some error, and doubts, and uncertainty, as respects the character of the disease, and also disabused the public mind of the common error of looking upon it as contagious, we now enter more practically upon the disease in its clinical aspect.

CHOLERA AS SEEN AT HAMBURG.

In the year 1832, we published a third volume of a medical journal at Baltimore. In the number for July of that year, we made the following communication:

Our readers will recollect that we have, in our preceding

volumes, afforded information, from time to time, concerning this wide-spread and alarming disease. The disease continuing its ravages, and having, in its course, advanced nearer and nearer to us for the last two years, too much pains cannot be bestowed on this momentous subject. We have not met with anything which has lessened our confidence in the opinion most generally entertained by the profession in Europe at this time, and which we have been endeavoring, with some of the most able of the profession in this country, to establish, *i. e.*, the non-contagiousness of cholera. But, notwithstanding the settled conviction of ourselves and many others, still there are many of the profession, but especially there is a large portion of the people, in Europe and this country, who believe the disease to be contagious. Such being the state of things, it seems meet that we continue to add a few more important items of information from abroad, with a view of more generally and firmly establishing the opinion which we believe to be incontrovertible, viz., that the disease, known by the name of Asiatic or Russian cholera, is not contagious, nor can it be arrested in its career by quarantine or sanitary cordons.

Since our last publication on this subject, we have received important information from different quarters. The most satisfactory account which we have received, as regards the cause and the symptoms of the disease, is contained in a pamphlet, forwarded to us, some time since, by our friend and correspondent, Dr. Frickë, of Hamburg.

It is said that, at a time when there was no cholera known to exist within thirty miles of Hamburg, it suddenly made its appearance, in the beginning of October, 1831. Its approach towards the city was anticipated by the medical public, and precautionary measures were adopted to prevent its occurrence. *Indeed, the cool and unprejudiced observer, says our author, had for months perceived a resemblance in the diseases which existed then at Hamburg, and those which had always preceded cholera in neighboring towns.* In answer to the question, How did the disease originate at Hamburg? Dr. Frickë says, it is only necessary to examine the contents of the pamphlet before us, to be satisfied that cholera is not contagious.

There is appended to the pamphlet a ground-plan of Hamburg, with the names of all the streets, courts, walks, &c. By this plan it appears that the disease, which set in about the first of October, existed in nearly one hundred streets within that month. The first cases were remote from the wharves, and no disease existed at the wharves, except the case of one man, about the 10th of October, who had no communication whatever with the land, till he was removed to the hospital; already containing several patients affected with cholera.

We are reminded that the cholera broke out at Dantzic about the 29th of May, 1831; at Riga, about the 25th of the same month; at St. Petersburg, about the 29th of June; at Königsburg about the 22d of July. In consequence of the approach of the disease, thus clearly manifested, the senate of Hamburg resolved to do everything in their power to prevent the arrival of the disease in their city. The disease still approached, and was soon at Berlin. At this early period, measures were adopted to establish a rigid quarantine at Hamburg against such places as were affected with the disease. About the 10th of September, a quarantine was established, which prohibited all ships from entering the port without clean bills of health.

So apprehensive were the city authorities of the entrance of the cholera, that, as early as the 30th of July, there was a town meeting among the city officers, at which was organized a general health commission, consisting of a certain number of the senators, physicians, surgeons, and apothecaries. The general health commission was made to consist of four members of the senate, two physicians, one surgeon, two apothecaries, and four burghers, with two citizens from the suburbs, and an assistant body composed of an equal number of professional men; the whole constituting a body of about thirty of the most respectable and intelligent men in Hamburg.

Among their early measures, in addition to their establishing a quarantine, and other restrictive measures, they provided hospitals in anticipation, in which were provided two hundred beds, physicians were appointed, and all necessary officers and

servants; and it was made the duty of the citizens, having cholera in their houses, to put out a label, upon which was written "Cholera."

The following brief abstract of the meteorological observations may not be uninteresting. If we take into the account the months of May, June, July, August, and September, the year 1831 (the year of cholera) was warmer than the preceding year, and warmer than usual. The thermometer rose in '31 to 20° R. on fifty-two days; in the year '30 but twenty-seven times. The mean temperature for '31 was 13° 38′; that for '30 was 12° 09′. The temperature was suddenly reduced in September. The barometer ranged higher in '31 than in the preceding year. The hygrometer ranged higher in 1831 than in 1830. There were more clear days in the year 1831 than in the year before; and, leaving September out of the account, more than common. In 1830, there were 101 rainy days; in 1831 there were but 82. The wind was much more frequently from the east in 1831 than in the preceding year; it was seldom west, which is ordinarily the prevailing wind.

POPULATION OF HAMBURG.

Hamburg contains 120,000 inhabitants, of which the strangers and military make one thousand. There are about 8,500 houses, besides a large number of halls and small dwellings (booths), and 18,000 inhabited cellars. Many of the poor in Hamburg live in narrow passes, that are damp and filthy; and many of those who inhabit these places never see the sun, except they leave their dwellings. There are many who live in wider streets, but in deep cellars, which are damp or wet; these two classes make from thirty to forty thousand persons, besides which there are about six or seven thousand paupers. These cellars are liable, two or three times a year, to be filled with water by the rising of the Elbe—the water remains usually six or eight hours, after which the inhabitants clear out the cellars as well as they can, and move into them before dried; and yet it is known that people have inhabited these cellars

for two or three generations, and many of them have arrived at great ages.

Dr. Frickë has given an abstract of the deaths for ten years preceding that in which the cholera made its appearance; by this abstract it appears that the mortality had been on the increase for some years preceding the existence of cholera. In the year 1830 there were 5350 deaths, and but 4,582 births, making a difference on the side of mortality of 758. It is not a little remarkable that, in the month of September, 1830, *there were seventy-two deaths by consumption, while in* 1831 *there were but six during that month.* And in the month of October, 1831, while the cholera was raging there, but twenty-eight cases of consumption occurring, while in the same month of the preceding year there were forty-two deaths from that disease.

The first case of cholera that was known to occur in Hamburg, was on the 6th of October, 1831, and it appears that, on that day, there was but one case. The highest, up to the 15th, was fifteen; and the total for those fifteen days was fifty-two. A seaman died on shipboard, at quarantine, on the 2d of October. He had been affected with chronic diarrhœa, but died without vomiting or fever. There were no pains in the abdomen, nor was there headach. The body, being dissected by a council of physicians and surgeons, they gave as their opinion, that this was not a case of cholera. The ship, having made out her quarantine, lay harmless at the lower harbor.

ANNOUNCEMENT OF CHOLERA AT HAMBURG.

First Report.—The public surgeon, Hauptfleish, on the evening of the 6th of October, 1831, reported to the authorities the following information: "To-day, at noon, I was called to a deep cellar, to see a sick man, named Peter Peterson, 67 years of age, and, according to the report of Johanna Ohleus, Peterson had been in her cellar on the 5th of October, and drank a great quantity of sour milk, and afterwards drank several drams; and he was a free drinker of ardent spirits.

On the 5th of October, three-quarters of an hour after ten o'clock, this man was overtaken with violent vomiting and purging, which continued very violent till half-past two in the night; after which it was somewhat abated, till six in the morning. The patient was now greatly reduced and broken down, but still conscious. I forthwith applied remedies, but without effect. The patient grew constantly weaker, the breathing rattling, the extremities as cold as ice, the hands and feet blue, the eyes sunken in. These symptoms were accompanied with an intermitting pulse, and cramps in the extremities. He died at six o'clock. The body was immediately taken to the dead-room at the Curhaus. On the 7th of October, the body was inspected, and the muscles were found hard and stiff, and there were bluish spots on the hands and feet, which rapidly changed to black. Inquiry instituted, to ascertain the habits of Peterson, went to prove that, as before stated, he had been living about four months in a deep cellar, and was a free user of strong drink. For the last twenty weeks, he had not been out of Hamburg. On the 5th of October, he had been at two places, but had no intercourse with strange seamen, or other strangers. He had not visited any water-craft, except at the wood-bridge and brook-bridge, where he witnessed the landing of fish and potatoes. The deep cellar in which he died was situate No. 30 Nicolai Street, running from east to west, about eight hundred feet from the wharf, on the evening side, not narrow, but wide and high. There was a great number of beds crowded in the apartments of this extensive cellar. Forty persons, of different occupations, tenanted the apartments, at the time under notice. On the 11th of October, these persons, with others, amounting to 85, were removed to a better location, at the expense of the city, and kept under guard.

Second Report.—On the 7th of October, the city physician found a woman, named Maria Dorothy Beckman, aged 28 years, sick in bed. The disease had made its appearance half an hour before he saw her—giddiness, pulse very small, face pale, and the extremities pretty cold. Dr. Hauptfleish ordered such internal remedies as he judged proper, and spirituous

rubbings. At a second visit, the extremities were as cold as ice, the eyes sunken, and the pulse scarcely to be felt; severe cramps. At six o'clock, there seemed to be some amendment; the pulse more perceptible; but at ten o'clock she was worse: the hands and feet blue, the eyes are sinking in deeply. Half past twelve o'clock at night, patient had convulsions, which lasted in the toes (cramps, we suppose) for more than an hour, when she died. She had been extremely intemperate, but had not been out of the cellar for twelve weeks preceding her attack, except once a little way into the country, to dig potatoes, which was on the 5th of October.

Third Report.—While Dr. Schleiden was attending the above case, a man came to his notice—a notorious drunkard, Wm. Summers, aged 37, a native of London. He complained of pains in the breast, giddiness, heaviness at the stomach, with convulsions. An emetic was given, after which Drs. Schleiden and Hauptfleish employed venesection, blisters, leeches, rubbings, &c. During this day, the symptoms seemed to abate. On the next morning, the symptoms were worse, in consequence of his having drank a large quantity of ardent spirits; the face now Hippocratic, pulse scarcely perceptible, voice weak and hoarse. He was taken to the Hornwerk Hospital, where he died the next day. It was ascertained that he had not been out of the cellar for four weeks. The night that Peterson died, he paid him some attention, and slept with him.

Some time after the above reports were made, Dr. Bucheister, physician to the Hornwerk Hospital, represented as follows: "I found, on the 9th of October, at the time I took charge of the cholera patients, at the Hornwerk Hospital, a man who had sickened on the 7th, in Nicolai Street, in a deep cellar. This patient had been much benefited by bloodletting, frictions, opium, and camphor, &c., but was now growing worse. The entire skin was cold, the eyes sunken, the aspect of the face greatly anxious, the tongue covered slightly, great desire for cold drinks, the pulse scarcely perceptible, vomiting and purging of thin, whitish matter, cramps in the legs. Brisk rubbing with rum; and cold water, with a little wine, was directed in small portions. The following prescription, of which a table-

spoonful was to be given every hour: ℞.—Infus. Menth. pip., ℥viii.; ad liq. laud. Sydenham. gtt. lx.; liq. Hoffm. ℥ij.: misce. His abdomen had been blistered. He slept some during the night, but vomited and purged twice. In the morning, the anxiety was much abated, the skin is something warmer, the tongue is coated brown, the voice weaker and hoarser, thirst great. Proceed with the medicine, and give, for drink, thin mucilage of salep, with a little red wine.

On the 10th, the patient vomited once more, and the scene became changed. He was restless, talked now English now German, lost his physical powers, and talked incoherently, and strove to get out of bed; the tongue moist, thirst abated, the body warm, no vomiting or purging, slight cramps and convulsions, pulse quick and small, eyes glistening, appearance of typhus versatilis. Mustard was applied to the calves, and there was directed the following: ℞.—Camphor, gr. xxxi.; gum Arabic, q. s.; aq. menth. ℥vj. Misce; table-spoonful every hour. He died at midnight.

Dissection.—The eyes deeply sunk in their sockets, and turned upwards; appearance of despair; extremities contracted. Two inches above the hands was bluish red. On cutting open the belly, there was considerable serous discharge. The stomach distended, and one of its coats slightly reddish, covered with whitish slime; the liver outwardly whitish; upon cutting into it, found much venous blood. Gall-bladder much distended with yellow-greenish bile; the outer coat of the intestines slightly red, covered with whitish-brown matter, much of which lay in the colon. The bladder was firmly drawn together, and empty; in the aorta and vena cava, venous blood. The brachial arteries empty; the radial was filled with coagulated, tar-like blood.

Fourth Report.—On the 8th of October, a man named Adam Heuer, who lived 3500 feet from the wharf, had died suddenly that morning. This man had been attacked in the night, and complained of stricture at the breast, and had great thirst. He drank a great quantity of cold water, afterwards some warm beer. Soon after this, severe vomiting and purging came on, to which was soon added strong cramps at 8 o'clock

in the morning; soon afterwards, the body was found, yet warm, on the floor; the eyes deeply fallen in, the lids livid, the extremities and joints generally stiff. The muscles of the thighs, particularly the vasti and rectus femoris, moved themselves, a short time after death, with spasmodic movements. The report of this case induced Dr. Dammart, a senator, to call together the city authorities and physicians, to witness the dissection of Beckman and Heuer.

REPORT OF DISSECTIONS AT HAMBURG.

Saturday, 8th October, 1831, a meeting took place for the purpose of witnessing the dissection of the body of the woman Beckman. The body well-formed, denoting strength, legs livid, extremities stiff, the fingers bent into the hands, nails blue, gangrenous spots on the arms, back, and other parts, the eyes half open, pupils moderately open, face marbled with lividness.

Opening of the Head.—The dura mater was bluish, and much turgid with blood; the falciform process was attached to both lobes of the brain,—the pia mater had a whitish matter weeping from about the crown of the head; the veins were much filled; the brain itself was full of blood; the more internal parts of it less turgid with blood. In the ventricles there was a little yellowish serum; the plexus choroides was filled with dark blood. The lower surface of the brain, and for some distance into its substance was a little red; the cerebellum a little softened—on the bottom of the skull was seen some bloody water, that seemed to come from the spinal canal.

Opening of the Thorax.—The lungs, when looked upon, or cut, were healthy and bloodless, and without adhesions—in the pericardium was found a little serum; the auricles of the heart bluish and distended; in the left ventricle a little *dark blood; the right crowded with very dark blood; the aorta much distended with very dark blood;* the supplying veins empty; no polypous concretions.

Opening of the Abdomen.—The omentum was moderately red, as also the outer coat of the intestines. The larger in-

testines of a whitish color; the gall-bladder well filled with reddish slime. The bladder empty and contracted; spleen normal; the liver somewhat softened and pale; the stomach outwardly whitish, inwardly its entire coat was covered with blackish, thin slime, which commenced distinctly from the duodenum, where there was an ecchymosis; the small glandular bodies of the abdomen appeared normal; the cæcum was filled with a whitish mass of an opaline appearance, which, upon opening the part, assumed a chocolate color; the gall-bladder well filled with healthy bile; the small intestines contained a thin fluid, not unlike rice-water, but a little reddish—the inner coat of the intestines was generally red.

Question put to the Physicians by the Health Commission, who were sitting on the case above noticed.—Is this case, so far as may be inferred from what has been presented, Asiatic cholera? Answers in the affirmative by Doctors Schleiden, Ebeling, Frickë, Kunhart, Gerson, Chaufepë, Sen., Zanck, Sandtman, Homan, Zimmerman, Nagel, Günther, Oppenheim, Bucheister, Baeckë, Trier, Kulensmidt, Bernhardt, Hauptfleish, Deidricks. We have the pleasure of knowing personally most of the gentlemen whose names appear in the above list, and know them to be men of eminence in their profession. Without disparagement to the other gentlemen, we wish especially to notice the suavity of manner of the good and gifted Chaufepë, who has been styled the "Rush of Hamburg." It may be observed, that there were twenty members in the above board; and it was a noble instance of devotion for the benefit of mankind; for, we have no doubt the majority of them, at that time, were believers in the contagiousness of cholera. By their noble, and we may say disinterested exposure to the effluvium of the body, for such they believed to exist, at that time, they gave an important instance of much exposure, without catching any disease. We had the satisfaction, the year before the cholera occurred in Hamburg, to read before those gentlemen and many others, a memoir to prove the non-contagious nature of yellow fever, for which we received a unanimous vote of thanks, and, we hope, made a good many

converts to our opinion, which probably led to ready conversion in respect to the non-contagiousness of cholera.

Dissection of the body of Heuer, whose disease and death has already been noticed.—Robust, above middle size, and muscular; extremities stiff, but not livid; the skin on some of the fingers was drawn in; the scrotum and penis livid, gangrenous spots on the back. Opening of the Head.—The dura mater and brain turgid with blood, and some adhesions of the membrane to the brain; the substance internally not injected with blood; a little water in the ventricles; the plexus choroides not injected, nor was there any blood at the base of the brain; the sinuses of the brain filled with thin grumous blood; the cerebellum sound.

Opening of the Thorax.—Adhesion of the right lung, both lobes much injected with blood; in the pericardium a little watery fluid; the left ventricle of the heart filled with dark blood, the right quite full. The aorta slightly filled with blood, the *great veins empty*.

Opening of the Abdomen.—The omentum pretty sound, not reddish; the blind gut distended, and contained a fluid resembling rice-water; it was neither whitish nor reddened, but marked with spots. The inner coat of the intestines a little reddened, and filled here and there with a reddish fluid. The stomach was much distended, and contained a portion of fluid resembling beer; liver sound; the gall-bladder filled with a very dark fluid; some mucus in the duodenum; the bladder empty and very closely contracted.

PROCEEDINGS OF HEALTH COMMISSION.

Question by the Commission.—Was this also a case of cholera? The question was again answered affirmatively by Drs. Schrödter, Schleiden, Frickë, Kunhardt, Chaufepë, Sen., Zanck, Homan, Sen., Zimmerman, Gerson, Sandtman, H. Nagel, Kulensmidt, Günther, J. E. Bucheister, Trier, Hauptman, Bernhardt, and Diedricks. Upon the delivery of this record and account of the dissections to his Excellency Burgomeister Dr. Bartels, President of the Commission, notice was given to his

Magnificence, the President of the Senate, Dr. Abenroth, through whom the Senate was convened the same night. The Health Commission assembled with the Senate, and sat till after midnight, when they made known that, whereas, it appears by three authenticated cases, and two dissections of dead bodies, and most of the physicians and experienced persons, who had knowledge of the facts, being of the opinion that these were cases of the cholera, it becomes the duty of an elevated Senate to make public such facts, and to forbid the issuing of clean bills of health, to make known the same, and, as suspicious cases may arise, make them also known, so that all circumstances, subservient to the end in view, be made known. Dated at the Senate Chamber, at Hamburg, October 9th, 1831. The Senate directed the Health Commission to do everything necessary in fitting up hospitals, &c.

On the 8th of October, Dr. Stamman reported the case of a woman, who was seized at six o'clock in the morning, and died at three o'clock in the afternoon; the principal symptoms were cramp of the stomach and diarrhœa.

Sixth Report.—John Classen, a paver, who lived 2500 feet from the wharf, died suddenly on the 8th of October. The body was sent to the Hospital Ericus, and Dr. Siemsen, Hospital Physician, gave the following account of the dissection. Outward appearance of the Body.—The face somewhat livid; the eyes much sunken; the nose pointed; the extremities livid; the hands spasmodically drawn in; hands and feet wrinkled; age between forty and fifty. Opening of the Thorax.—The lungs presented adhesions; their substance normal and not much injected with blood; the outer covering of the heart (pericardium, we suppose) livid; the veins, particularly the great veins, were turgid with blood; in both ventricles black fluid blood. Opening of the Abdomen.—The substance of the liver very firm; upon cutting into its covering, much clammy, black blood escaped upon pressure; the spleen very soft; the stomach outside somewhat reddish, the inside covered with a greenish mucus; the vessels of the intestines, particularly those of the duodenum, remarkably conspicuous; a quantity of yellowish gray substance in the intestines. Contents of the gall-bladder.—

Blackish-green and thin; about eight ounces of dark-greenish fluid mixed with shreds of lymph; kidneys turgid with blood; the bladder closely contracted and corrugated; some whey-like urine.

Seventh Report.—On the 9th of October, there came into the fever department, a woman who had been seized with the disease the day preceding. Purging and vomiting were already severe, with violent spasms; the skin as cold as ice; anxiety great; great restlessness; pulse very small, at times imperceptible; great thirst, particularly for warm drink. Frictions were applied, but seemed to increase the spasms, and had to be left off. A large orifice in the arm afforded a few drops of tar-like blood, after which she was immediately put into a warm bath, when the blood began to flow, till she lost about ten ounces during ten minutes that she was in the bath; soon after taken out of the bath, the spasms became extremely violent. About midnight she was suddenly overspread with a warm perspiration, which did not last long. In the morning the body was as cold as ice, the anxiety great, and she was again overtaken with vomiting and purging. She died after having severe spasms.

Eighth Report.—Dr. Bucheister reports the case of C. J. Sieman, aged forty-three, laborer, a great drunkard. He was seized on the 8th of October, at one o'clock. He had had a number of evacuations, upwards and downwards, before admission. The heat of the skin not quite extinguished; an eruption appeared over the whole body resembling petechiæ. He was immediately put into a warm bath, where he was well rubbed, and remained in ten minutes, after which he felt better. An infusion of peppermint and laudanum was given every hour. On the 10th, the skin warm and perspiring; the head red and hot; the eyes much reddened, restless with delirium; pulse full, but not hard; bled to ten ounces; the blood clear, and flowed in a stream. An hour afterwards there were strong symptoms of oppression of the brain; twelve leeches to the temples; sinapisms to the calves; every hour two grains of calomel; cold applications to the head. 11th. Took fifteen grains of calomel; rested well; the face red and covered with sweat; the tongue somewhat coated, moist and warm; eyes

less glassy; heat of skin natural; more rational; the pulse small; no purging nor vomiting, no spasms; urine red and clear, passed about six ounces; no pain in abdomen. Continue cold applications to the head; prescribed 1 gr. of calomel and 5 grs. of sugar of milk every hour. In the evening there were appearances of congestion of the head; slight wanderings, so that he loses himself when speaking. Twelve o'clock at night, directed twelve leeches to the head. October 12th. Has slept some last night; the skin natural in temperature; pulse small; he is more rational; has had three passages of brownish matter; the region of the liver painful; tongue red, hard and dry; continue the cold application to the head. Give ¼ grain of camphor and 5 grains of sugar of milk every hour. Sago with wine allowed. In the evening the temperature good; pulse small; tongue whitish; mind disturbed; conscious when spoken to; sinapisms to the calves. On the 13th, in the morning; he was restless last night, and talked incessantly, and struggled to get out of bed; pulse small; temperature good; had several brownish, thin passages; tongue coated yellow; continue the 5 grain doses of sugar of milk and ¼ grain doses of opium every two hours; cold applications to the head. In the evening he is much worse; delirium greater; is weaker; pupils contracted to a mere point; temperature reduced; twelve leeches to the head; sinapisms to the calves; an hour afterwards 6 grains of musk with 2 of opium; after lying a little while quiet, he died in dreadful convulsions at twelve o'clock at night.

We may observe, in the foregoing report, that this patient was treated more actively than any of those reported at Hamburg; but the active remedies, as bleeding to ten ounces, two grains of calomel every two hours, and cold applications to the head, were not employed till the third day of the illness; and the five grain dose of calomel not till the fourth day; the first twelve leeches on the fifth day; sixth day, twelve leeches were applied to the head, also ice. *Sugar of milk!* where is thy potency? It is evident that the more active measures in this case were so much out of time as to render them hurtful, instead of adjuvant. Besides, we would remind the reader of

the patient's drunken habits, which unfitted him for rapid or considerable depletion. It is highly probable that this man would have died under any treatment; but the duration of the case was unusual, and depletion, more timeously applied, might possibly have afforded a different termination.

Ninth Report.—On board a ship, which left Bahia on the 16th of July, 1831, P. Engelund, a seaman, was affected with slight diarrhœa from the 1st to the 10th of October, which increased for want of care. This ship had not touched at any port since leaving Bahia till she arrived at Hamburg on the 14th of September. He drank, while on board, freely of fresh beer. On the 8th of October, at night, the spasms were so violent that his comrades remained with him. On the 10th, he was taken to the cholera hospital. None of the ship's crew, excepting the captain, had any communication, direct or indirect, with the land, till the 11th of October, some days after this disease prevailed in streets, in cellars, and narrow passes, quite remote from the ship.

On the 20th of October, Ollef Sermonius was taken from the same ship, sick of cholera, to the hospital. On the 22d and 23d, two other sailors on board were affected with cholera, but were cured on board the ship. This day, the 31st of October, the whole crew are in health.

Dr. Bucheimer reports the case of Engelund thus: Has been affected eight days with diarrhœa, to which were added, the day before his admission, vomiting and spasms. The matter evacuated resembles rice-water; cramps in the feet; great thirst and anxiety; pulse small; temperature moderate. He was immediately put into a warm bath, and was well rubbed while in; after the bath he felt very ill; severe spasms and vomiting. Infusion of peppermint and laudanum, and sulph. ether were given; twelve leeches to the scrobiculus cordis. At twelve o'clock, the spasms had somewhat abated; there was a gentle warm perspiration over the whole body; the pulse a little raised; tongue slightly coated. In the evening, the temperature of the skin was diminished; the vomiting and diarrhœa frequent; rubbing, and warmth, by means of jugs, were directed.

October 11th, in the morning; he has vomited and purged

several times. The fluid thrown up resembled camomile tea, that from the bowels rice-water; the extremities were cold, and no perspiration; spasms but seldom; anxiety not great; pulse not perceptible. Some medicines were directed, which we do not deem important; but in the evening it disagreed with his stomach. He now makes no complaint, but lies with his eyes half closed, and mouth open; answers sensibly, and has still great desire for warm drink. At midnight he had several involuntary passages from his bowels.

12th of October, in the morning. He has slept a little during the night, and laid still; vomited and purged several times; the distress in the precordia not great; spasms not strong; the pulse a little raised; blisters which had been applied drew well. In the evening he has vomited and purged once; pulse small, but perceptible. Sago with wine and some camphorated medicine; blister to the neck was renewed. 13th, morning. Slept some last night; towards morning he vomited some bilious matter, and had many thin brownish passages; the tongue coated yellowish; the temperature natural; pulse tolerably distinct; no spasms, but frequent eructations; slight pain in the precordia. In the evening, congestion of the head; pulse small; face red; restlessness; vertigo; rather unconscious; skin cool; twelve leeches to the head; cold applications with ice to the head, and sinapisms to the precordia. 14th, morning. Slept well for six hours; pulse slow; face not red; temperature good; died soon after midnight.

It seems proper to observe here that in this case, as in all those where the more active treatment was employed, this was instituted too late. After the blood has settled in a state of turgescence in the brain and its membranes, we cannot reasonably expect to overcome this simple congestion by means of depletion. We should rather apprehend injurious effects. But we believe there is a period when such tendencies may be arrested by suitable depletion. We shall, however, defer our more exact practical views until we come to speak of the disease of 1832, in Baltimore, &c.

The foregoing cases afford us much exact knowledge of the symptomatology and of the treatment, which, in confirmed

cholera, has been alike unsuccessful in all places, and under all treatment. We deem it important to extend our quotations through some more dissections, and we may perhaps notice, as we proceed, some remarkable symptoms and other matters.

Case of Frederick Wagner, a laborer, twenty-four years of age, who died of cholera, and of whose body it is said, it presented outwardly the habitus cholericus. Opening of the head.—Vessels of the dura mater much filled with venous blood; bloody points through the brain, and its substance somewhat watery. The cerebellum surcharged with blood, and was red; arbor vitæ turgid with blood; bloody serum flowed from the spine, upon removing the brain. Opening of the thorax.—The right lobe of the lungs had been diseased, the left was healthy; the ventricles of the heart, particularly the right, turgid with dark blood. In the aorta were polypous masses. Opening of the abdomen.—The liver had a stony concrete on its surface, otherwise it appeared to be sound; gall-bladder not much charged with bile; bladder contracted, small and corrugated; peritoneal covering of the stomach of a rose-red color; mucous coat covered with a greenish fluid; intestines on the inner surface reddish, and some reddish fluid in their canal.

Specimen Case of Cholera.—The following case is so strongly marked by symptoms of malignancy, and is what may be termed a fully portrayed case of cholera, that we present it as a perfect specimen of that disease.

Anna Garrasen, an inhabitant of a deep cellar, thirty-five years of age, of dissolute habits. She sickened on the 10th of October, and was taken to the hospital. The day before her attack she was quite well, and slept well the night before. The attack commenced with violent vomiting and purging, and violent pains in the belly. When she arrived at the hospital, the whole body and tongue were ice-cold; the face looked as if frozen; the hands blue with cold; eyes deeply sunken in; tongue coated white, but moist; pulse imperceptible; the purging and vomiting continues severe, and the discharges colorless, thin fluid; great anxiety; violent cramps, worst in the feet; precordia in great distress, worst towards the back. We shall not notice the treatment further than to say, she was

put into an alcoholic bath, at 45° R., where she remained twenty-five minutes, and felt better; the surface became warm again and moist. An hour after this, she presented the aspect of a person in typhus fever, and death came to her relief thirty-three or thirty-four hours after the seizure.

Dissection of the body.—The face much fallen in; eyes drawn upwards; abdomen much swelled; extremities drawn; hands and fingers of a livid color. Opening of the head.—Upon cutting into the coverings of the brain, there appeared much venous blood; dura mater injected and dark; much blood flowed upon cutting into the substance of the brain; ventricles filled with clear serum; also the third and fourth ventricles. Opening of the thorax.—Except some adhesions, the lungs were sound, the heart large and soft. Opening of the abdomen.—The surface of the liver pale, substance of it not much charged with carbon; the gall-bladder filled with yellowish bile; some reddish spots in the stomach; one ulceration in the intestines; serum quite full of whitish matter; aorta and vena cava filled with carbonized blood; bladder contracted.

A man named Wittchief, fifty-three years of age, died of cholera, after a few hours' illness. Dissection.—The eyes much retracted; skin on the hands and feet much wrinkled; the former drawn in and locked; the latter also contracted. Opening of the head.—The dura mater was closely adherent to the skull; the brain softened, but not injected. In the left ventricle some watery fluid; plexus choroides was turgid with blood; cerebellum soft and injected; some bloody serum flowed from the spinal canal. Opening of the chest.—The left ventricle of the heart was filled with thin, black blood; in the right ventricle was seen a polypus; the aorta contained a dark, blackish blood. Opening of the abdomen.—The liver was outwardly red; its parenchyma filled with dark blood; kidneys injected; bladder closely contracted, and full of muddy urine; the inner coat secreting foreign matter; serous coat of the stomach was reddened; the inner coat of the intestines apparently normal; gall-bladder filled with dark bile; spleen injected, and had some adhesions.

A man named Neuter, aged fifty-three, lived in a deep cellar, sickened on the 11th October, and died on the 13th.

Dissection.—Outward appearance: fingers locked inward; muscles of the arms contracted; lower extremities bent inward; hands livid; head turned backward. Opening of the head.—Upon opening the head, there was a mass of thick blood, and the vessels of the brain were turgid with blood; dura mater strongly attached to the skull; through the brain was seen a serous fluid; ventricles filled with serum, and a little serous fluid flowed out of the spinal canal. Opening of the chest.—Lungs injected with carbonized blood; heart attached to the pericardium, not a drop of moisture in it; heart flabby; left ventricle quite empty, the right well filled; in the ascending aorta much dark blood. Opening of the abdomen.—The intestines appeared in a contracted condition; liver pale, but inwardly full of venous blood; intestines outside slightly reddish; the stomach contained a brownish fluid; the mucous coat here and there reddened; bilious matter in the small intestines; below thinner, and of a feculent smell; bladder closely contracted; kidneys turgid with venous blood; also the crural artery, and the descending aorta filled with venous blood.

Bevern, a laborer, sickened with cholera at one o'clock in the morning, and died in eleven hours.

Dissection.—The facies cholerica was not strongly expressed: palms of the hands and soles of the feet a little wrinkled; the extremities livid, and strongly muscular. Opening of the head.—The dura mater was reddened and injected with dark blood. The brain was soft, the vessels much injected; much blood flowed upon cutting them; both ventricles filled with serum, about half ounce in each; plexus choroides very much injected; glandulæ pinealis empty; cerebellum very soft, and much injected; about an ounce of serum flowed from the spinal canal. Opening of the chest.—The vessels of the lungs were injected with dark blood; the left ventricle of the heart was filled with black blood, and also the aorta. Opening of the abdomen.—The left lobe of the liver was enlarged, its substance pale; dark blood escaped upon cutting into it; gall-bladder not very full of bile; it was thick and viscous; spleen somewhat injected; intestines injected, reddish-livid; some whitish

fluid in them; in the stomach flocculi floating in a yellowish fluid; bladder much contracted and empty.

John Uhl, aged twenty-two years, sickened on the 12th of October, and died the second night after the attack of cholera.

Dissection.—Head bent backwards; eyes violently drawn inwards; fingers and toes drawn inwards; hands livid; abdomen flat. Opening of the head.—Dura mater injected with dark blood: water flowed from the spinal canal. Opening of the chest and abdomen.—The lungs much loaded with blood, but little water in the pericardium; heart large and flabby; in the left ventricle much coagulated blood, also some in the right; the intestines much inflated, and reddened on their outward surface; bowels contracted; bladder closely contracted, and not a drop of urine in it; the gall-bladder full; spleen much injected with blood, and easily torn; the radial and crural arteries filled with venous blood.

Henry Berg, forty-one years of age, was sent to the hospital on the 14th of October, and died the next day.

Dissection.—The head was drawn back; the arms contracted inwards; lower extremities very stiff; the whole appearance haggard; the eyes violently drawn upwards. Opening of the head.—Dura mater much injected; both ventricles filled with water; the arteria basilaris much distended with blood. Opening of the thorax.—A little water in the pericardium; no blood in the left ventricle, the right quite full. Opening of the abdomen.—The liver very full of venous blood; gall-bladder moderately filled with bile; the outer coat of the intestine slightly reddened; feculent matter in the small intestines; spleen very soft; bladder violently contracted, and contained a creamlike fluid; this was also seen in the pelves of the kidneys.

John Katzal, aged thirty-four years, died after a few hours illness.

Dissection.—Head bent backwards; the arms in a flexed position, as also the fingers, and bluish; legs flexed; muscles very rigid; fingers and toes wrinkled. Opening of the head.—There was a remarkable dryness of the membranes of the brain; the dura mater, and the brain filled with hypercar-

bonized blood; in the ventricles a good deal of carbonized blood. Opening of the chest.—The lungs filled with hypercarbonized blood; some water in the pericardium; heart large, soft, and lax; much dark blood in both ventricles; in the right there was a polypus, more than an inch long, broad and dense, in which was a hollow filled with serum. Opening of the abdomen.—Bowels disturbed in their arrangement; an unusually fetid smell in the bowels; outer coat considerably reddened; the inner coat of the intestines slightly reddish; the inner coat of the stomach and intestines reddish; and in them was a portion of blackish matter, and in the latter the usual rice-water fluid; an ulceration in the jejunum; liver pale on the surface, little blood escaped upon cutting into it; gall-bladder filled with an inky fluid; spleen soft, and much injected with blood; kidneys contained a matter resembling pus; bladder closely contracted, and empty. Opening of the spinal canal.—The brain and membranes reddened; some serum under the arachroid membrane; the spinal medulla somewhat reddened, cauda equina, natural. All the arteries, even the smaller, were filled with hypercarbonized blood, the same in the venous system.

Maria Harder, twenty-four years old, sickened on the 26th October, and died next day. Outward appearance.—Eyes drawn backwards, the head also; great despair depicted in the face; extremities flexed. Opening of the head.—There was a general turgescence seen upon opening the brain, and effusion of serum. Opening of the thorax.—The lungs were filled with venous blood; heart large and flaccid; both ventricles surcharged with blood, and this obtained in the veins also. Opening of the abdomen.—The bowels somewhat deranged; outer coat slightly reddish, and in these the usual contents; the stomach contained a portion of blackish water, which resembled tincture of capsicum in smell; there was several dark-red spots on the inner coat of the stomach; liver pale on its surface, turgid within with hypercarbonized blood; gall-bladder filled with acrid bile of inky blackness; the spleen soft and injected with dark blood; kidneys contained a portion of purulent matter; bladder closely contracted; the uterus, on its underside very red. Opening of the spinal canal.—The coats of the spinal

brain were much distended, and contained a large quantity of clear serum; the cauda equina also much reddened, and also contained perhaps half a pound of fluid.

SPECIAL REMARKS ON PROCEEDINGS AT HAMBURG.

Among the singular facts attending the cholera at Hamburg, is, that although it existed there about two months, it did not occur in Harborg, a considerable town, immediately across the Elbe—up to the 6th of November, there had not been a case of cholera in that town. We have been led to believe, that the dissections at Hamburg are of the highest importance, and that they serve materially to illustrate the pathology of the disease. The reader may have remarked, that in most cases, the most strongly marked sign of the disease was turgescence of the vessels of the brain, and it is not a little remarkable that so great a degree of turgescence and effusion is seen to take place in so short a time. It appears also, that the bladder was found contracted and empty in almost all the cases. In a few instances there was a little muddy urine or pus—showing that this viscus is among those that suffer, although the kidneys are more at fault. We see occasionally turgescence of the lungs, of the liver, and in most cases, reddening of either the inner or outer coats of the stomach and bowels; sometimes in both coats. Sometimes turgescence of the spleen, and in the kidneys, &c.; but in all this, there is but little uniformity; these derangements appear rather as wayward associates, which nevertheless serve to show, the potency of the cause of the morbid phenomena attending the disease before us.

DISSECTIONS OF CHOLERA SUBJECTS AT MOSCOW.

We extract from the Edinburgh Medical and Surgical Journal, for October, 1831. "The extract (says the editor of that journal) from the report of our countryman Dr. Keir, of

Moscow, supplies the first complete account we have seen, of the morbid appearances observed in the Russian epidemic, and we shall therefore transcribe it here *verbatim*, requesting the reader to compare Dr. Keir's description with that given of the appearances in the Indian cholera, by the report of the Madras Presidency, and extracted into this journal; the Russian account runs thus:

"The appearances in the dead body were not uniform, and varied according to the duration of the disease, and the circumstances under which the patient died. As this was the case, I conceive the most satisfactory way, by which I can answer the inquiry on this head, will be to transmit the printed account of the dissections made at Moscow, and presented to the medical councils by its members, who occupied themselves the most with this part of the duty, while I add here the impressions made on my mind by the dissections at which I was present."

"The extremities were, in general, more or less contracted, and the skin of the hands and feet corrugated, the features sunk and ghastly. On opening the skull, the bloodvessels of the brain and its membranes were more or less turgid with blood, particularly towards its base; the arachnoid, and, sometimes in several places, lost its transparency; and adhered to the pia mater; a fluid was sometimes effused in the convolutions of the brain in some quantity; and more or less serum in the lateral ventricles. The bloodvessels of the vertebral column and spinal cord, were more or less loaded with blood, which was sometimes effused between its arachnoid membrane and dura mater. Partial softening of the substance of the spinal cord was sometimes met with; and marks of inflammatory congestion in the larger nerves. The lungs were generally gorged with dark blood, and the cavities of the heart filled with the same, and frequently containing polypous concretions. In all the dissections I was present at, very dark-colored blood, which, when extended on a white surface, resembled the color of the darkest cherry, was found in the arch of the aorta, and in other arteries."

"The state of the abdominal organs varied considerably;

the stomach and different parts of the intestines, were frequently found to be partially, but considerably contracted; the internal surface of the stomach seemed to be little affected. A whitish or yellow fluid matter, resembling the evacuations, was frequently found in different parts of the alimentary canal, which, now and then, contained a great deal of air. In either case, both stomach and intestines bore marks of congestion, and of a sub-inflammatory state, varying from dark-colored spots of small extent to several inches, affecting the whole circumference of the intestines. The color of these parts also varied a good deal, from dark-colored venous congestion to rose-colored inflammation. In one case the internal surface of the stomach was so strongly and so generally turgid, of a very dark color, that it might easily have been mistaken for gangrene. On exposing the stomach between the eye and the light, it was evident that there was neither gangrene nor solution of continuity, but that the dark color proceeded from a very general and great congestion of a very dark-colored blood, in the vessels of the organ. The subject of the case, I was told, had died of symptoms of a typhoid nature, after suffering from the usual symptoms of the epidemic. Excepting one case, which evidently was one of congestion, and not of inflammation, I saw nothing in the morbid appearances from which a conclusion could be drawn, that inflammation was a very general morbid change in the alimentary canal, or a common cause of death; however, by its presence in the second period of the disease, it might add to the general irritation, or, even as a consequence of preceding congestion, be itself occasionally a cause of death. Both the stomach and bowels were sometimes of a paler color than natural, both on the outer and inner surface; but neither thickening nor condensation from inflammation, nor ulceration, destruction of substance, nor abscess, appeared in any of the dissections I was present at."

"The liver was generally pretty full of dark-colored blood; the gall-bladder frequently much distended with tenacious ropy bile, of a dark-yellow or green color; the gall-ducts sometimes contracted, at other times not; the appearance of the pancreas, spleen, and kidneys was various, frequently differ-

ing but little from their natural state, in other cases rather surcharged with blood; the urinary bladder almost always collapsed and empty; uterus generally natural."

The reader will here recognize a striking similarity between the appearances, as reported by Dr. Keir, at Moscow, and Dr. Frickë, at Hamburg. And it is particularly mentioned by Dr. Keir, that there was more uniformity in the evidence of congestion in the brain, than of other viscera. This we have pointed out particularly in our account of the dissections at Hamburg, and hence we derive the term cholera lethalis.

PHYSIOLO-CHIRURGICAL OBSERVATIONS—BERLIN.

A pamphlet bearing the above title, was forwarded to us in 1832, by our talented and respected friend, Dr. J. F. Diffenbauch, of Berlin, Prussia. These observations upon cholera patients embrace a species of vivisection, which were considered by us highly interesting at the time of their reception; we still deem them worthy of record in a work on epidemic cholera. "This is a disease of vagrant character, and still in some degree the opprobrium medicorum. One is astonished," says our author, "to find that, upon cutting into the skin with a surgical intention, in a cold, bluish, pulseless cholera patient, to find no blood escapes, and the wound is cold as ice, and all the circumstances attendant resemble an incision upon a dead body. The sharpest knife moves along through the skin with difficulty, in the youngest person, full of blood; [ought to be] the skin is so contracted and tough as to feel like that of an old woman. Indeed, an incision can be made with more facility in the dead body than in a pulseless cholera patient. An incision is readily made in the living skin, well-filled with blood, and made firm by its living economy, and hence it is that an operation can be more readily made on the living body than the dead. If we hold the skin in a fold, and cut through it with the knife, the incision will be made more or less easily in proportion as the fold is made more tense. The skin shows no disposition to retract when wounded with the knife. If we separate the edges, they remain stationary, and if replaced,

they will remain so. If we separate the wound, with the cellular membrane, so as to expose the layers of membrane and muscle, the large vessels, and the venous cords, we may observe the following phenomena:

"We first observe, that the wound does not bleed at all, that the skin is bloodless, and does not present, upon an incision being made, the ordinary slight red, but mostly a cinnabar yellow. If the part wounded was in a livid state, the sides of the wound appear of a bluish-brown color; if we wipe off the wound with a sponge, we observe that this coloring, from the division of the capillaries, brings forth a little treacle-like blood; but a portion of the fluid remains behind, and cannot be pressed out. In such cases, the surface of the wound is somewhat darker than where the skin is white. The fatty portion of the skin is of a glossy yellow color; under the skin of young, healthy persons, as if it were weakened, is tough and less yellow, and in general it is very dry.

"A most remarkable change is seen in the cellular membrane, which binds together the muscles; it is generally rigid, dry, and clear, like a piece of isinglass; the division of it presents the same transparency as that of the skin of cold-blooded animals, as the frog, turtle, &c. If we stretch it tightly, we can see through it. The aponeurotic membranes, the tendons and cartilages, appear white, but they have less of the usual silvery appearance; they are much softer, and withered.

"The muscles are not paler than common, but somewhat brownish; their sensibility is less excited by mechanical irritation, in a remarkable degree, and any disturbance by art discovers but little delicate sensation. The larger nerves are also altered in their appearance; they are much paler than in the usual surgical operations, and feel softer; the irritability of the nerves of the skin is not altered, since the division of the skin of a cholera patient is attended with as violent pain as that of healthy persons; at any rate, the otherwise torpid substance, when cut, gives rise to very violent pain; and if we disturb a nerve, by means of an instrument, or pinch it with the forceps, we occasion severe pain, and if it goes to some particular muscle, the muscle is made to exhibit convulsive

movements, as is usual upon applying violence, as may sometimes be seen in surgical operations.

"The principal circumstances of the subjects under notice, are those connected with the vessels. The wound never bleeds, and, upon cutting, the cellular membrane looks as if it had been washed, or rather like an anatomical preparation of the eye; but little lymph can be squeezed from the edges of the wound; everything looks dry. If we wipe off the surface, it is long before it becomes moist again. It is but seldom one sees a portion of tar-like blood escaping from the wound of some extent in the skin; and the blood is so thick that it does not flow over the whole wound. By pressure, this dark blood may be made to come out of the vessels. The small vessels contain but little blood, and this viscid blood cannot be made to flow from the veins where we wish to draw blood.

"There is a resemblance in the appearance of the veins to those of slaughtered animals—one may distinguish the dark, thickish contents through their coats. We do not find in them the usual equal distribution of the blood, but we observe an inequality in parts closely adjacent, some being filled with very thick, and others with very thin blood. Where there is turgidness, it does not seem to be owing to increased force in the circulation; the vessels seem to have lost the power of reaction, and appear to be dead. If we apply a finger to a turgid vessel, the blood readily yields to the pressure, both ways, in the vessel.

"In the large veins, such as the vena axillaris, in muscular men, the shrinking up of the vessels is, to be sure, not quite so considerable, but I have several times seen the jugular vein empty, and with the size and appearance of a string of twine. By stroking along a vein with a finger, and moderate pressure, the vein may be entirely emptied, not only in the direction of the heart, but towards the periphery. If we let it remain still, it does not soon fill, but if we squeeze the limb, or press upon the muscles, the emptied vessel fills again, as well from the cardiac side as from the distal.

"We find none but the larger veins turgid with tar-like blood, such as the axillary, jugulars, &c.; those of middle size, as the

brachialis, basilica, cephalic, and others, are generally empty, and there is associated with this, stagnation in the capillary vessels of the skin. In this, the friends of the belief of obstruction see the very obstruction itself. It is particularly remarkable, that at times the jugulars are reduced in size, and very empty, while the arteries, to the touch, indicate their full activity. These veins do not fill upon pressure being applied near the clavicle, and, therefore, they cannot be the medium through which the blood returns from the head. At times, the middle-sized veins contain a considerable abundance of blackish blood, which does not move in them, but is formed into long coagula. This is sometimes seen in the subcutaneous veins, and may be distinguished through the skin. The ordinary amount of blood circulated by such veins may be about one-fourth of the usual quantity in the healthy condition. If these veins be laid bare, their sides do not lie down flat—the vessel remains round, and resembles a cord. This smallness of the coats of the vessels is not owing to a living contraction, but depends upon the peculiar condition of the blood, which is formed into cord-like coagula.

"At times, the vessels appear to be entirely empty, and like a thread, and again to be filled, but often quite empty. None but mechanical means can be made to push the blood in a vein that has been laid bare. Rubbing, warming, and working of the whole limb may propel the mass, but it is not by a living action, but the propulsion is entirely mechanical. If we find a large vein distended, and make attempts to expel the blood, by straight, long incisions, and find that the blood will not flow freely, it is not on account of the thickness of the blood, nor weakness in the vein, but particularly to the want of force in the arteries, since it is by the arterial circulation that the heart is made to press forward the venous circulation. Is it not possible that this fails in the disease before us? If we, with Bichat, Broussais, and others, ascribe the circulatory function to the capillary system, we shall find it, in the present case, entirely suspended. But we are reminded of the very interesting experiment of Magendie, who included the whole of the leg of a dog, except the principal artery and principal vein.

On the latter vessel he applied a particular ligature, and opened the vein near the ligature, on the distal side. The blood began to flow freely while the artery acted, but upon closing the artery by pressure, the blood immediately began to flow slowly from the wound in the vein, till the artery was emptied, when it ceased altogether. Perhaps," says our author, "if the nervous fluid had been suffered to pass the ligature, the circulation might have been revived.

"The phenomena which we observed in the livid, cold, pulseless cholera subject, differ in several respects from all we know respecting life or assimilation. The appearance of a large bared artery of a cholera patient differs in several respects from what is commonly seen. Generally, if the arteries are not specially diseased, we see them in other diseases (after death) unaltered, as if they had performed their functions of life and sustentation. In ordinary circumstances, we see an artery that has been laid bare presenting the appearance of a white-reddish shining cord, possessed of elasticity. Here, on the contrary, we find it dull and lax, not for want of being filled, but because its coats have lost their living tension, or turgidness. It appears as if the artery had grown lean, and its coats loosened; and the vessel does not seem merely to be disturbed in its economy, but impaired in its conformation. This altered condition of the arterial coats attaches, in some degree, to all the structures, particularly the membranous, the fibrous, and the cartilaginous. Their vasa vasorum are not visible,—not even through a lens. The whole vessel appears smaller in its calibre; and, owing to the wasting of its coats, it is, in fact, smaller than natural."

"I have often found the brachial artery not larger than a thread used by apothecaries. It is only in stout men that we may expect to see it larger. When we apply a ligature to a healthy artery, but little of the artery is to be seen, since the rotundity of the vessel, and the rising of its sides, will bury the thread from both sides; here, on the contrary, the thread is mostly to be seen, since, owing to the softened state of the coats, they do not swell out and cover the thread.

"In the cold cholera patient, there is at times a gentle pul-

sation, and one has the sensation as if a little wave of blood has passed in the vessel. The circumstance is very strange that the thick blood which is present in the great vessels, cannot reach the extremities through the main vessels, or its collateral branches, in an unbroken wave, partly, because it is too thick, and partly because there is not sufficient force in the heart to propel it.

"It is not easy to explain the phenomenon, that the coagulated blood is drawn into the heart, while the dying artery propels its contents by its last living function. From this thick blood in the heart's ventricles during life, are certainly formed polypous coagula, and the heart labors in vain to discharge its contents. Oftener, there are found coagula at the mouth of large vessels, and stops them up, or obstructs them so as merely to permit a thinner part of the blood to pass, and since I see these coagula in the large arteries, I may safely conclude that they exist in the living heart also.

"Certainly, small waves of blood were seen sometimes upon opening a large artery. I took particular notice that if the artery of the arm was opened, while there was a slight pulsation in it, there sometimes escaped a very thin blood; but, in a majority of cases, where the vessel was opened, it ceased to pulsate. In one case of a blue, pulseless cholera patient, in the hospital of Dr. Romberg, I performed the operation of opening the axillary artery for a bloody inflammation, and immediately the blood flowed in a stream. The blood had a rose-color, was thin and warm, and at the same time the patient was as cold as ice, and had a livid appearance. It flowed like blood out of a vein, in an even curved stream. After I had drawn off four or five ounces, great debility ensued, while the emptying heart, by its action, was destroyed by its contractions; the patient soon afterwards died. The blood flowed freely, and retained a red color.

"Upon the more or less fluidity of the blood, and the power of the heart to propel it, depends the continuation of the action of the pulse. Sometimes a single propulsion of a wave of blood presents a slight or greater stretching of the artery, we feel sometimes, here now there, a single pulsation,—now we feel it in the radial, now in the brachial, and again in the

axillary; and there is a slight irregular thrill, like resonance, from the feeble action of the heart. The arteries of the upper extremities are, in general, emptier than those below. The latter I have not opened in the living subject. But, when no pulsation could be perceived, I frequently saw in the dead subject sometimes thin, sometimes thick blood. In general, the arteries contained blood in the dead subject, and yet during life they were empty; the carotids pulsate most distinctly; they do not, however, force the blood through the small vessels of the brain, otherwise the blood would return by the veins in greater quantity, and hence it is that the patient is left with the blood coagulated in the brain.

"May not the blood, after it is driven as far as it can be, be made to pass backwards, as we have seen in some of the lower animals, which possess retrograde vessels. The peculiar pulsation in the carotids gives the sensation of a pressure acting backwards upon the wave of blood. Where else is the blood to remain in the head, if the carotids continue to force it into the vessels, and the jugular veins do not bring it back again? and we have seen that these veins are generally empty. A similar state of things seems to obtain in other organs, as the lungs, where a circulation exists backwards and forwards in the larger vessels. The respiration seems to indicate this state of things, and the appearance of the lungs, after death, serves to support the opinion that such is the condition of cholera patients. If I inject into the veins of dogs gum water, it remains and produces an indescribable distress of breathing, and the hoarse sound resembling that of cholera patients; and we find that the fluid has not passed into the capillary vessels, but remains in the larger vessels. The dissections of the lungs of these animals presents the same appearances as are seen in cholera subjects, the same stoppage and dark color in the substance of the lungs. This is the true explanation of the difficult respiration attended with hoarseness in cholera. [We think it probable that the hoarseness in cholera is owing to irritation of the reflected branches of the vagi.]

OBSERVATIONS ON TRANSFUSION.

"It occurred to my mind that the subject of transfusion was not only of high interest as regards the cholera, but that physiology, in general, might there by receive improvement, and in the hopelessness of the cases of cholera, we might try to substitute for the tar-like blood, that of young persons in health, which, by being suited to the living economy, might stir up the heart, and thus enable this organ to free itself of the dying blood, and by the new blood give health and vigor to the nervous system. The fresh blood may give new impulse to the organism, and bring back things to their natural condition. It must be human blood which we dare transfuse, since the blood of different animals would endanger poisoning by the presence of prussic acid. Before attempted, we should take away a portion of blood, by which the circumstances associated with the operation will be lightened, without which the heart is made too full. [This cannot be done as a rule of practice.]

"I made the injection by laying bare a vein under the skin in the arm, into which was introduced a small tube. The blood was drawn into a warm cup, and the blood drawn into a syringe was thrown slowly into the vein. The injection was made at intervals, and so as to throw in, in from five to seven minutes, at several times, an ounce at a time. The operation was attended by the following phenomena. In the first instant, the patient was only sensible of a swelling out of the veins, by which the blood was carried to the heart. Then came alteration of the pupils, sprightliness of the eyes, heavy respiration; then return of pulsation, and warmth of the cheeks that were previously cold; the hands and feet remained cold. Death succeeded the operation in one case in half an hour. No remarkable difference in the termination from other cases. The stethoscope indicated a thrilling sound at the heart.

"The dissections, made with particular care by Dr. Phœbus, presented the following appearances: The heart and large vessels were filled with dark blood; in one case the right jugular vein was found filled with air, but it did not extend to the sub-

clavian vein. In the vena cava superior, &c., was seen thick black reddish blood. In the left ventricle was seen sometimes a thinner blood, separated from the black blood. The brain, as in most other cases of cholera, was stuffed with black thick blood.

"The most remarkable of all the appearances, which presents itself among others in the dissection of cholera patients, is the fact that the injected blood does not unite with the other blood. Does this depend upon a repulsive operation of the different kinds of blood upon each other? or is this a struggle between the dying and living matter brought into contact? or is it simply owing to indisposition to the union of thick and thin fluid? During the operation of injection, and before I was aware of what would be found upon dissection, I made these observations. A dram of thin cholera blood, which I drew from the arm, would not mix with a portion of red blood, which flowed from the arm in a stream, but remained separated. When they were mixed together, they made a marbled appearance."

OBSERVATIONS ON THE PRESENCE OF AIR IN THE HEART AFTER DEATH.

There being portions of air in the right side of the heart, and larger vessels, it became a question, whether it was formed in the vessels, or was admitted at the wound of the veins. I have been led to believe that the air is generated in the vessels, since I have several times observed, when I had laid bare a vein, air could be seen in the vessel. Sometimes it remained stationary, sometimes, upon stirring the limb, the air passed towards the heart. This was the case in the subject upon whom Dr. Böhr practised transfusion; when that operation was performed, he is certain that his experience upon brutes is such as to enable him to inject blood into the vein without passing in a particle of air. It is only a large quantity of air in the vessels that kills instantly, and not because it is a poison as some have supposed; but it kills by mechanical obstruction of the capillaries of the lungs. It remains in the lungs like

mucilage, quicksilver, or other thick fluids, which remain and obstruct the air vessels. Death occurs here not from derangement of the heart, but of the lungs." Dr. Diffenbauch, notwithstanding the unfavorable termination of the cases in which transfusion had been employed, seems to think, that the practice is deserving of further attention in desperate cases: if this remedy fails, so do others.

We are told that, in a patient, who was dying, and suffering great anxiety and laborious respiration, our author, with the approbation of Dr. Casper, opened the brachial artery in its upper third, and passed in a flexible tube to the heart, and no blood flowed through the tube, even when the tube had reached the heart; the action of the heart became stronger and more frequent, and the tube was immediately withdrawn.

It is said in support of the fact, that a partial interruption of the pulsation of the arteries and a total suspension of the circulation, the following case is noticed. Our author opened the artery of the left arm of a woman, in the hospital of Dr. Casper, in the lower third, and it was with difficulty that a small quantity of black blood could be obtained. The artery was now tied with a ligature, and the edges of the wound adjusted. Strange to tell, "the arm, though long covered with a cold moisture, became before death covered with a warm moisture; the skin was warm, and the living aspect returned, with a pretty good pulse in the radial and ulnar arteries. This circumstance is supposed to be important, because it is an encouraging fact that, in cholera patients, cold and half dead, we find there is still a possibility of a renewal of the circulation."

"The process of adhesive inflammation, or union by the first intention, was not interrupted by the reduced state of health of the skin, but rather facilitated. The orifice from bleeding, or other small wounds of the skin, healed quickly; in young persons, these wounds take on inflammation sometimes, and run into suppuration, as was occasionally observed in hospital cases." Our author thinks, upon the whole, that in cholera patients, there is a pretty vigorous condition of the plastic principle of life; a remark which would apply to paralytic limbs; in both cases, wounds heal quickly, or run rapidly into

inflammation, and, in the latter case, there is a speedy termination; but, in cases of cholera, opportunity was not had to observe the former.

We are told, one might suppose, that large wounds in cholera patients, being left open to heal by suppurative inflammation, would remain very dry, on account of the general dryness of the body, as we see in wounds in cases of typhus fever, in which the process of suppuration is entirely interrupted. It has been remarked that wounds in cholera patients are very dry; charpie remains dry, and the deposition of lymph takes place later than common. The lips of the wound remain very little hardened and pale; but, after a time, there is very little secretion into the wound of a thin purulent matter. The pus is sometimes not thicker than milk, has a whitish yellow color, and looks much like oatmeal gruel, but a little whiter; has a faint smell, and when dropped into water it falls to the bottom, but forms into threads, and some mucilage. The granulations of wounds are of very fine grain, and look pale. A similar appearance attended a wound made in a case of strangulated omental hernia. Six or eight days afterwards, this patient was seized with cholera, and died of the disease. In this case the healing process advanced rapidly, and healed with extraordinary quickness.

The foregoing experiments bring to our recollection an opinion which we have long entertained, that, in most epidemics, cases of sudden death have been preceded for several days, sometimes much longer, with disorder of the system, before the fatal outbreak; and very often there are premonitory signs, which, if attended to, would prevent the disease from becoming dangerous, or, perhaps, from forming at all, and this, we think, is especially common in epidemic cholera.

We will not undertake to judge for our readers, how far these vivisections upon the human body are warrantable; we leave each one to make his own conclusions. We may remark, however, without making ourselves a party in the matter before us, that, as these cases were necessarily fatal, and the experiments did but in a slight degree increase their suffering, and the subject of cholera was involved in much obscurity, and a strong

necessity existing for light on the subject, there is little, if any room, for censure. Knowing the author personally, as we do, we would be little disposed to think that he would engage in novelties without a strong expectation of doing good.

EXAMINATION OF DIFFENBAUCH'S EXPERIMENTS.

Diffenbauch tells us, that he found "the large nerves paler than usual." This circumstance seems worthy of notice, since there is strong reasons for believing, that the first great link in the catenation of destructive phenomena, is nervous derangement of the splanchnic system, by which the whole living economy is thrown into ruin. We wish the reader to carry this observation to our description of cholera. Our author has said "it is particularly remarkable that, at times, the external jugulars are reduced in size, and very empty, while the arteries, to the touch, indicate full activity. These veins do not fill upon pressure being applied near the clavicle, and therefore, they cannot be the medium through which the blood returns from the head." We have not noticed the exact condition of the external veins, but nothing, perhaps, is more common than to see the carotids having a good share of activity, while there was no longer any pulsation in the radial arteries; and when we look at the injected condition of the brain, and associated structures, we observe a phenomenon which we cannot explain. Diffenbauch would explain it on the ground of retrograde action in the arteries, by which the blood is thrown back; but it is not easy to see where it can be thrown backwards. The large arteries, by their abundant supply of vasa vasorum, seem to have a sort of erectile condition; and may appear more tense than they really are, and so, on the contrary, arteries when over-distended with blood manifest less activity of the circulation, than really exist within the vessel, from which we deduce an important indication for bleeding, in cases of disease of an inflammatory character. Of this state of things, we may

judge by the circumstances associated with each case. We believe, then, that an artery may present more force, or less force, than the amount of blood passing indicates. It may be, too, that much of the accumulation of blood in the encephalon may occur in the advanced stage of the disease. We imagine it a possible case for the arterial blood to wave back and forward where there is great debility.

We find in the observations before us, the following remarks:

"It appears as if the artery (when laid bare) had grown lean, and its coats loosened; and the vessel does not seem to be merely disturbed in its economy, but impaired in its conformation. This altered condition of the arterial coats attaches, in some degree, to all the structures, particularly in the membranous, fibrous, and cartilaginous; their vasa vasorum are not visible, not even with the lens. This falling off in the size and firmness of the structures, corroborates what we have said respecting an erectile property in the arteries, in particular; and, the more or less plumpness of the veins and membranes, is owing to the relative condition between the structures in the abstract, and the vital fluids. We have here the appalling fact, that the entire economy of the system is thrown into disarray in cholera, as it advances rapidly from *bad to worse;* for, when once the vital influences between the assimilating nerves, with its brainular connection, is withheld from the receiving capillary organization, the living power is, so to speak, dethroned, and death soon immolates the victim; nor can human skill avail after a certain period, for the first seat of life is destroyed.

"In general, the arteries in the dead subject contain blood, and yet, during life they were empty." This has been shown by Diffenbauch's experiments. We have remarked in reading accounts of dissections of cholera patients, that little or no notice is taken of the state of the membrana conjunctiva, but in the cholera of the present year (1854), this has been almost a uniform symptom; nor must we forget to notice the almost constant appearance of serum in the brain, as well in the spinal as the cerebellum, or rather at the base of the brain of the head. We are aware that but a short time will suffice to pro-

duce serous collections in inflamed parts; but there is no symptoms to support the supposition, that there is any inflammation as a part proper of cholera. We see cholera often terminating in a few hours; and, upon dissection, serum exists in considerable quantity at the base of the brain, or in the ventricles. We believe with Diffenbauch, that the blood accumulates in the head for want of propelling power in the vessels, especially the veins; and here we see just ground upon which to place the ancient views of a *vis a tergo*,—and in this *vis a tergo* is necessarily associated not only the venous system, but also the motor power of the nervous system;—a power of propulsion, which fails as cholera advances.

DIFFENBAUCH ON TRANSFUSION.

Speaking of transfusion, our author says: "The fresh blood may give new impulse to the organism, and bring back things to their natural condition. It must be human blood which we dare transfuse, since the blood of different animals would endanger poisoning by the presence of prussic acid." Blood was drawn into a warm cup, and injected at intervals; an ounce was thrown at a time, till several ounces were thrown in, in from five to seven minutes. The patient was first sensible of a fulness of the vein by which the blood was carried to the heart. "Then came alternation of the pupils, sprightliness of the eyes, heavy respiration; and afterwards return of pulsation, and warmth of the cheeks that were previously cold; the hands and feet remained cold. Death succeeded the operation in one case in half an hour."

It is said we must use human blood, because the blood of other animals contains prussic acid. Besides this objection, we must not forget that the organization of our blood is peculiar, and that each animal has, no doubt, its blood-cells peculiar, which is organization; and organization is as essential to life in the blood, as that of the solids. We lose sight of the physiology of the blood, when we suppose it to hold its vital

power while exposed to the atmosphere, already tortured to death by being subjected to the violence of falling through a cool air, and being subjected to the violence of falling, and then forced in and out of a syringe.

We will here state a case of transfusion, which we practised some years ago, at the Maryland Hospital, which we do from memory. A man had cut his throat so as to divide the trachea, and although the principal arteries were not wounded, he had lost so much blood before his admission, that he was now nearly pulseless, and of course, extremely prostrate.

While we were preparing for coaptating the parts, he was nearly suffocated by the lower fragment of the trachea sinking in under the integument. A sailor volunteered to furnish blood, and we proceeded to inject a portion into his arm. It was, however, of no avail, he died in a few hours.

We would here call the reader's attention to the report of Dr. Diffenbauch respecting the indisposition of the blood of a healthy person and that of a cholera patient to mix, whether attempted by injection into the living veins, or mixed in a cup; in the latter case, the mass assumed a marbled appearance. We have something to say respecting some experiments which we made in 1832, upon cholera patients, by saline injections; but we defer this till we come to speak of our treatment of epidemic cholera in Baltimore in that year.

Diffenbauch thinks, "upon the whole, there is in cholera patients a pretty vigorous condition of the plastic principle." We must here most decidedly differ with this opinion, if taken in a general sense. That there may remain a certain amount of the plastic principle in the skin, as stated by our author, we will not question; but, so far from there being anything like a normal share of this principle in cholera patients, *it is this vis plastica that is especially assailed in cholera;* the whole abnormal phenomena being primarily and principally seated in the organs of the assimilating economy, and, so far as the greater organs of sustentation are concerned, the grand system of splanchnic nerves is primarily and especially involved, the ganglionic centres lose their equipoise, and thus it is that assimilation fails.

We have elsewhere contended that inflammation is not necessarily present in the healing of wounds. The experiments of Dr. Diffenbauch go to support our opinion. That is, inflammation, though almost uniformly present in wounds, is not positively necessary; on the contrary, the less inflammation present, as a general thing, the sooner will the wound heal by the first intention. In this, we think, we see a confirmation of our own opinion, that inflammation need not come to the aid of adhesion of living parts, and that in cholera patients the skin is weakened in its vital forces to a degree that lessens the tendency to inflammation, and may, thereby, possibly increase the adhesive condition, in which we have a confirmation of the accuracy of Diffenbauch's observation, that wounds of the skin in cholera patients readily heal.

DIFFERENCE BETWEEN EPIDEMIC CHOLERA AND CHOLERA MORBUS.

In the brief historical account which we mean to offer, we design introducing occasional remarks on other characteristics appertaining to the disease. We think it highly important that the general public, as well as the medical, should have correct views of this disease, and as it has fallen in our way to see a good deal of epidemic cholera, we hope to be usefully employed in presenting such knowledge as we have been enabled to collect on this momentous subject. After a good share of observation and experience, we believe we are justifiable in declaring, as our opinion, that, when considered and adjudged on the broad ground that the epidemic cholera covers, we can truly say that, by the judicious employment of precautionary measures, both public and private, we may greatly lessen the mortality, quiet the apprehensions of the citizens subjected to the disease, and show that, although liable to become a destructive disease here and there in a community, it is, nevertheless, a mild disorder in a vast majority of cases, and easily manageable at its inception.

There is the most satisfactory evidence that the cholera, which made its inroads upon the city of Baltimore principally in the year 1832, and has, so to speak, become acclimated in this country, is no new disease. The most remarkable epidemic of this sort which has prevailed, was early in the 14th century, a time when medical learning was at a very low ebb. There is accounts of a most frightful aspect relating to this disease in different parts of Europe; some of the towns in the north of Europe, if we may believe the chronicles of the times, must have been nearly depopulated. We have the most frightful accounts of its existence at Lubec, in the Danish dominions; and notwithstanding that that city is not materially altered in anything relating to its localities, its buildings, or the character of its inhabitants, the cholera of 1831, which raged at Hamburg, thirty English miles distant, did not reach Lubec. But of this appalling epidemic of the 14th century, we have no satisfactory medical account. It was known by the name of *Black Death*, a term no doubt derived from the remarkable prevalence of a lividness of cholera patients in malignant cases.

While we express as our opinion that the epidemic, which made its appearance in Baltimore in 1832, was not a new disease in the great domain of the world, we must admit that, to us of the present time, it is as new as though it had never existed; and hence it is, that the several countries of Europe, like our own, were taken by surprise in encountering the disease, the more so from its possessing such a vast dominion, and in this respect it is new. The disease has assumed rather the endemic than the epidemic character, there being no reasonable ground for supposing that the influence giving rise to the disease has any direct bearing from city to city; while, on the other hand, influenza seems to have such a general bearing. But the term epidemic cholera has become familiarized, answers our purpose, and, therefore, needs no alteration.

ACCOUNT OF CHOLERA BY MADRAS MEDICAL BOARD.

We are indebted to the Madras Medical Board for the following particulars: "A disease having, in October last, prevailed at Arcot, similar to an epidemic that raged among the natives about Paliconda, in the Abrose Valley, in 1769–'70, an army of observation, January, 1783, and in the Bengal detachment at Gangam in 1781, and in several other places, at different times, as well under the appearance of *dysentery* as cholera morbus, or mordixim, but attended with spasms of the precordia, and sudden prostration of strength, as characteristic marks."

We are next reminded of the account of Bontius, a Dutch physician, who wrote of the disease at Batavia in 1629. He says the cholera morbus "is extremely frequent;" the patients often die of it "so quickly as twenty-four hours at most;" "this disease is attended with a weak pulse, difficult respiration, and coldness of the extreme parts, to which are joined great internal heat and insatiable thirst, perpetual watching and restlessness, and incessant tossing of the body. If, together with these symptoms, a cold fetid sweat breaks forth, it is a certain sign that death is at hand."

Dr. Paisley notices cholera in 1774 at Madras. He says, "it is often epidemic among the blacks, whom it destroys quickly." When the disease is epidemic, "it brings sudden prostration of strength and spasms over the whole body." Dr. Sonnerat notices the disease, as it appeared 1774 to 1781: "There is also another disorder which reigns, and in twenty-four hours, or sometimes less, carries off those who are attacked." Debauchees, and those who have indigestions, are attacked with a looseness, or rather with an involuntary flux of excrementary matter, become liquid. This "flux," some years ago, destroyed about sixty thousand people from Cherigam to Pondicherry. The symptoms of this disorder were a watery flux, accompanied with vomiting and extreme faintness, a burning thirst, great oppression of the breast, and suppression of urine. Two years afterwards there was another epidemic,

in which "those who were attacked with it had thirty evacuations in five or six hours, which reduced them so weak that they could neither move nor speak. They were often without pulse, and the hands and ears were cold; the face lengthened; sinking of the sockets of the eyes was a sign of death."

Cholera was observed at the Mauritius, 1775 and 1819. Dr. Burne says, "the mortality was particularly among the blacks." At Gangam the cholera was extensively seen as an epidemic. "It seized them with almost inconceivable fury. Men, previously healthy, dropped down by dozens; and those less severely affected, were generally dead or past recovery in an hour. The spasms of the extremities and trunk dreadful; distressing vomiting was present in all. Besides those who died, upwards of five hundred were admitted into the hospitals daily."

This disease has been noticed by Curtis in 1782. From this up to 1790, the disease is said to have prevailed very frequently in different parts of the East Indies. It would be useless to repeat the symptoms; they were generally such as we have already noticed.

It is stated in the Bengal Report that, in April, 1783, cholera destroyed above twenty thousand people who had assembled at a festival. The Madras Board of Health observe, that those authorities would seem, accordingly, to establish the fact of its existence during the period extending from 1769–'70 to 1787, where we find the first records of this office, as given in the extracts, and which we now come to consider.

Dr. Duffin treats of cholera in 1787. "The cholera rages at Arcot with great violence; many of the men are carried off in twelve hours' illness." The symptoms are such as we have already noticed, and need not be repeated here. This epidemic, under the notice of Dr. Duffin, seems to have partaken a good deal of the spasmodic character, and seems to have been noticed by Mr. Thompson also, who says, among other things, that *the bladder was contracted to the size of a walnut.*

Cholera has also been in the Northern Circars. "The disorder was characterized by precisely the same symptoms which marked the late epidemic. It began with violent spasms

in the stomach and bowels, which were followed by purging and vomiting, and all the signs of extreme debility."

We do not deem it necessary to pursue the historical account of the Madras Medical Board further than to copy a few observations which we consider important. It is said, in the paper before us, "Having, in the preceding desultory remarks, attempted to trace the existence of cholera in India, from a very remote period down to that of its appearance in 1817, sometimes coming as a pestilence upon the land, at others visiting only particular tracts; and having also attempted to show grounds for inferring that we are not acquainted with all the instances of its epidemic visitations, nor by any means aware of the extent of its occasional or sporadic appearance; it only remains to refer the reader to the valuable reports of the Bengal and Bombay Boards, for information respecting its late march through the respective territories of those Presidencies; to Mr. Orton's separate work for many interesting particulars of its appearance here; and to the narrative at the first page of the report for an account of its progress through the Madras Territories. This narrative has been compiled from official reports; and, as it is intended to exhibit the history of the disease, as a sort of memoir to the map which is prefixed, it has been, as much as possible, divested of all medical reasoning.

"Cholera has generally been classed by nosologists under the head of fluxes; but Cullen, though retaining the name, which he understands to signify a flux of bile, and defining the disease to be so, or of a bilious humor, places it in his class neuroses, and constitutes it a genus of the order spasmi. Dr. Good, in his late valuable work, the Study of Medicine, retains the generic term cholera, which he justifies on the ground that the bile is morbidly affected, in its secretion, either in quality or quantity, and he places it in the class cœliaca, or diseases of the digestive function, and in the order anterica, or diseases affecting the alimentary canal.

"We are told that the term spasmodic, applied to Indian cholera, has met with very serious opposition; for, if restricted to the affection of the muscles of voluntary motion, it applies

to a symptom of minor importance, which, in a great proportion of cases, does not occur at all, of which the existence in other parts of the system cannot, by any means, be held as incontestably proved. The term *cholera epidemica*, is that which has been chiefly used of late, especially in official papers, and hitherto it has been sufficiently understood; but it is obviously adopted for temporary application only. I may, therefore, be allowed to substitute a term, by which it will be attempted to show, imports an unfailing diagnosis of this species of cholera, namely, the sinking, or arrest of the circulation, and, accordingly, we would call it cholera asphyxia, using the word asphyxia only in its restricted sense, that is, the stoppage, or suppression of the pulse."

"This proposed specific term, asphyxia, will, it is presumed, designate the disease unerringly; for, as far as our knowledge of it, either from history or observation, hitherto extends, there appears to be in all cases an evident tendency to sinking of the circulation; and an apparent arrest of it in the vessels of the extremities, if we may judge from the absence of pulse, and from the effects of venesection, in every instance where the complaint is not early cut short by art; and, especially, an arrest of it in every vessel accessible to our senses, in all fatal cases, at a period before death, comparatively more remote than is known in any other disease."

REMARKS ON THE REPORT OF THE MADRAS BOARD OF HEALTH.

The reader will perceive, that the foregoing observations and remarks, are taken from the Report of the Madras Board of Health. It is assumed in the papers from which we have selected our historical narrative, that asphyxia is a name better suited to epidemic cholera than any other that has been employed. From this opinion we differ, because the symptom upon which the epithet is founded, only applies to desperate cases, and those far advanced, a condition from which almost none recover, while there exist hundreds of milder cases, in the same epidemic. We suppose it will be admitted, on all

hands, that epidemic cholera arises from atmospherical contamination, and in all its bearings is the offspring of a peculiar malaria. This is an important feature in the subject before us; and affords a satisfactory ground of distinction between ordinary cholera morbus, and the widespread cholera. Cholera morbus has no specific cause, but is produced by fortuitous causes, and is only seen sporadically; for, if several persons are exposed to over-eating, over-exertion, over-heated, &c., one may have an attack of cholera morbus; another a gout; another sick-headache; but there is a specific cause of the cholera epidemic, which will, like small-pox, produce one disease only, and that mostly epidemically; so much so, that this is the strongest trait in its character: and hence we derive a name the most satisfactory for the disease which appeared first in this country in 1832, and has existed in some part of our country ever since. It is deservedly called epidemic cholera.

As to any nosological arrangement of this disease, every attempt at such an achievement must ever be abortive; nor will the lights we possess upon its pathology do more than lead us by the hand through the mazes of cholera. We have, in a preceding part of this work, endeavored to show that this disease, like all epidemics, is modified, from year to year, according as seasons produce modifications in the malaria, which though everywhere and always one product, has nevertheless aspects or conditions, which call for different modes of treatment. We may remark, in point, that there was a striking similarity between the cholera as seen at Hamburg, in 1831, and in that of Baltimore of the year 1832; while, between those epidemics and those which we have seen in the present year (1854), there was a striking difference. In the Madras reports, we read: "There is a very fatal form of disease also known in Travancore, called '*the red-eye sickness*' by the natives, which is evidently a modification of cholera." This has pretty strongly characterized the disease of 1854; a few cases of which we have seen in Columbia, and in York, Pennsylvania. We have seen decided differences also in Baltimore; though the disease has only existed there at any time sporadically since 1832. One year most of the cases exhibited more of the

spasmodic cholera, with less coldness of the tongue; but we shall have to speak more fully when we come to our description of epidemic cholera, and of its treatment in 1832.

It appears by the foregoing history of the disease, and some additional reports by the Madras Board, that cholera did not commence as has very generally been supposed, in the year 1817, in India. From that date it seems to have taken a very strongly marked epidemic character.

REPORT OF PHILADELPHIA COMMISSION, 1832.

We shall avail ourselves of the labors of the Philadelphia Health Commission, for a brief sketch of the disease, from 1817 down to its appearance in Paris. It is said, that "the epidemic cholera commenced its ravages in various parts of the Delta, formed by the mouth of the river Ganges, in India, during the summer of 1817. Presenting many of the features of the ordinary cholera morbus, it had some symptoms superadded, which distinguished it from that disease. The chief of these latter are, suddenness of the attack, and the rapidity of its course; the extreme exhaustion of the animal powers; the distressing cramps or spasms of the muscles of the limbs and body, which commonly attended it; and, more especially, *its strongly marked epidemic character.*

"Continuing its ravages from the period mentioned, by the end of 1818 the disease had pervaded nearly all of Hindostan, from the Himalayah Mountains on the north, to Cape Comoran on the south; and from Bombay and Surat, on the west, of Sylhet, on the east. In 1819, it broke out in the kingdom of Arracan on the east; Peran and Java on the southeast; and in the Isles of France and Bourbon on the southwest. The effects of the epidemic were also experienced still further to the southeast, over the whole of the Indo-Chinese peninsula. In 1820 it prevailed in Siam, Malacca, and the Philippine Islands, the southern provinces of China, and at Guzzerat, in India. In 1821, it occurred at Muscat, on the southern extremity of the Arabian peninsula, and again in the Island of Java. During this

season Bushire, Sebiraz, and other parts of Persia; Bossara and Bagdad, in Arabia; the Island of Bahrian in the Persian Gulf; and the Island of Borneo, suffered very severely from the epidemic. During the succeeding winter, the disease became dormant, both in Persia and Syria; but in the spring of 1822, it made its appearance again, among other places in Ispahan, Tehara, Tabritz, Moussul, and Diarbecker. By the end of the year, indeed, almost every place of note in Persia had been ravaged by the pestilence. In the spring of the year ensuing, 1823, it broke out at Latokia, Antioch, Tortosi, Tripoli, and in other towns along the eastern shores of the Mediterranean; and in the Spice Islands, as well as still further south in the Island of Timor, near New Holland. Previously to the autumn of this year, the disease had prevailed throughout the provinces of Asiatic Turkey; from Bassora and Bagdad, to Ezeroum and Antioch: Egypt, however, escaped until a much later period. In August of this year, the disease prevailed in the province of Shervan, and in Backu, as well as in other places on the western side of the Caspian Sea; and it finally made its appearance in the city of Astracan, near the mouth of the Volga. Subsequent to the year 1823, the disease continued its ravages throughout China, and in various parts of India; and towards the close of 1826, it almost depopulated several cities in Mongolia, occurring as far north as the borders of Siberia. In 1820, it appeared at Tiberius, in Judea. In Persia the epidemic reappeared several times; the city of Teheran being ravaged by it in 1829. In 1828, the disease was once more in the Russian dominions, appearing unexpectedly at Orenburg, a town situated on the Ural River, four hundred and eighty miles northeast of Astracan. On the setting in, soon after, of cold weather, it, however, completely and promptly ceased. But in the summer of 1829, it recommenced its ravages with greater severity, and occurred at many places, also, in the neighborhood. About the middle of June, 1830, the cholera made its appearance in Tiflis, a city in Georgia; and in the meantime re-occurred at Backu. By the 20th of July, Astracan was for the second time a sufferer from the epidemic. This disease occurred successively in various towns

and villages situated along the shores of the Volga; and from the south of the Caspian Sea, Iver, and Vologia; in a short period the disease made its appearance at Archangel, on the north, and in the greater part of Poland on the south; ravaging, in fact, the principal places, from the borders of Prussia to Odessa, and from Odessa to the White Sea.

"The disease appeared at Moscow the middle of September, 1830. In April, 1831, Warsaw was attacked; Riga, in May, Archangel, in June; in the latter month the disease appeared likewise at St. Petersburg, and in July at Cronstadt. In Dantzic, in Prussia, the epidemic broke out in May, 1831, and at the same time in Brody and Lemburg, in Austria. In Berlin the disease commenced in August; in Vienna in September; it likewise occurred in various parts of Hungary; and before the close of the year, it had desolated nearly fourteen towns and villages. In October it suddenly appeared in Hamburg, and in different parts of the kingdom of Hanover. In the month of August, it made its appearance in the eastern part of England; Sunderland, a sea port in the county of Durham, situated at the mouth of the river Wier. The disease did not, however, attract much notice till near the end of October. In December it prevailed at New Castle, on the Tyne, to the north of Sunderland, and at Gates End to the south. It likewise appeared subsequently, in various places to the west, and in different parts of Scotland. London became subject to the epidemic in 1832, and at Dublin, and different parts of Ireland; while in May, 1832, it prevailed to an alarming extent at Paris, and its neighborhood.

"In the month of June, it made its appearance at Montreal and Quebec, and was attended with great mortality. The disease also appeared at New York in the same month, and at Philadelphia in July;—presenting there, however, at that time but a few sporadic malignant cases, but became epidemic."

It was announced in the newspapers of the morning (July 25, 1832), that the Medical Commission sent by the Board of Health of New London to investigate the disease, and they were made acquainted with a disease precisely similar, in the winter of 1831–2, at which time it prevailed at New

London, and, it is said in the London Medico-Chirurgical Journal, that Dr. Dobson described the same disease, as it appeared at Leeds, in England, in the year 1825.

CHARACTER OF EPIDEMIC CHOLERA.

The first trait which we shall notice of this disease, is that of its being sometimes epidemic, sometimes seemingly endemic, and sometimes seen sporadically; but we believe it is always non-migratory. An epidemic disease, says Webster, is one which seizes a great number of people at the same time, or in the same season. And he refers to the influenza of October and November, 1789; that of March and April, 1790, that of the winter of 1824–5, and that of 1825–6, which were very severe epidemics. Let us digress here, one moment, to ask the question, What gave rise to those epidemics? They could only arise from some specific cause, and that inherent in the atmosphere, just as we see in cholera, or any other epidemic, except small-pox, which, though sometimes epidemically present, is only extended by a contagion generated in the body; but, even here, it would appear that there must be a condition of the air which increases the susceptibility of the human system to be impressed by the contagion, the disease being much more disposed to extend some years than it is in others.

It is extremely improbable that any disease possesses a migratory character. We have no proof of such a fact. The term epidemic, in strict propriety, means a disease which spreads, and may be confined to one neighborhood, or extend to several; but they do not pass over the broad seas, such as separate us from Europe. Webster says, "an endemic disease is one to which the inhabitants of a particular country are subject," and "the epithet is also applied to a disease which prevails in a particular season, chiefly or wholly in a particular place." The first explanation is the true meaning of the word, and it is in this sense only that it can be of use, since, if it means diseases which prevail in particular seasons, it would in

no respect differ from the term epidemic; and correct language has no synonyms. Modern language gives but a very limited use to the term endemic. Plica polonica, and the goitre of the Alps are specimens of what is meant by the word endemic.

THE EPIDEMIC CHOLERA IS NON-MIGRATORY.

The vast extent to which the influenza has been known to extend over the globe, has long since given rise to the supposition, that a poison being generated in some part of the world, may be spread by the winds over other countries. But that epidemic cholera does not cross the ocean, we think there is sufficient evidence. It is true that the epidemic of 1832, in the main aspect of its extension, has been westward. It entered Orenburg in July, 1829, since which its successive appearance has been almost due west, till it terminated in Canada. If we were to look at this fact isolated from many others, we might conclude, that the cause of cholera had been wafted on to our shore; but when we look at the history of the disease, we cannot admit such a supposition. Cholera has often existed epidemically at different places in the East Indies, and this is well known for near one hundred years. In Persia, it appeared several times. On the setting in of winter, it disappeared, in one instance, at Astracan, and reappeared in the succeeding summer. The same disease appeared at Leeds, in England, in 1825, and it is said to have appeared at Vienna twice; it existed at New London, N. E., in the winter of 1831–2. It has appeared at one town soon after it was known to exist at another, some miles distant, while the prevailing winds were contrary to its course in the direction that would favor its passing from the first point to the second. This was the case at Hamburg, and has often been seen in India, and of such facts we have taken notice in this work.

But, notwithstanding that the sea between the west coasts of Scotland and Ireland, and Canada, are much frequented by

our vessels, the fisheries at Newfoundland banks lying between, and many vessels having left Europe, freighted with persons who had imbibed the poison, and suffered with the disease at sea, yet in no one instance has there been a case of cholera occurring on the high seas, so as to be brought to our shores affected with this disease. With such facts before us, nothing but preconceived opinions, formed without opportunity for observation, can be brought to sustain any such conclusion. We may be asked, from whence have we the cholera poison? We answer, that for the present, we have not been able to bring it tangibly to view; but we have a condition of things which places this matter on grounds as satisfactory as that of almost any other grave subject belonging to medical science. We shall presently turn the attention of the reader to what we have to say on this interesting point. How can we conceive of a laboratory which shall generate a poison in India, or the more distant parts of Europe, sufficient to be carried by the winds over intermediate countries, and over the broad Atlantic? To our apprehension, this is alone sufficient to disprove the belief that an atmospherical poison has come from the East Indies, traversed parts of Europe, and afterwards filled this vast Continent with the same material.

We have already, in a preceding part of this work, taken some pains to point out the source of cholera fomites, but deem it proper to notice this subject briefly again. If we go to other countries, we shall find, as we do in our own, that cholera is almost entirely limited to low grounds, marshy places, or water-courses—in short, to locations where fevers, the acknowledged product of malaria, are indigenous, to this we may add, that wherever cholera appears epidemically, those fevers more congenial to the place, if we may use the term, have previously appeared, and mostly at the same season of the year. This has been the case at several places, in the present year (1854), and many of those who died of cholera would have died of bilious fevers, common or yellow, according to location, &c. We have seen, in this work, that cholera appeared at Hamburg in nearly one hundred streets within one month. Surely, if this disease was infectious, so as to be capable of extending the poison, by

personal contact, that city, and all others, might have been depopulated long since. Admit these premises, and it follows, that the malaria arising from the acknowledged material from which emanates the remote cause of our usual epidemic fevers, and we may safely consider the cholera as usurping the place of the more common occupants, and that the usurper obtains precedence by chemical affinities combining the elementary integrants of the malaria, a well-known attendant of riversides, and is the offspring of vegetable putrefaction, &c.

Everything, we think, conspires to disprove the belief, that the cholera poison came from the East, traversed parts of Europe, and then arrived in this country, and now fills a considerable part of this continent. Since we have no control over this specific matter, it is not very material whether we can or not ascertain its source, but we think, with Sydenham, that the primary cause emanates from the earth. In briefly summing up the character of cholera, we view it as an epidemic, and of course dependent upon some atmospherical contamination for its predisponent cause, mostly confined to neighborhoods of moderate extent, but sometimes simultaneously, or in near succession, in different places; is most clearly non-contagious and non-migratory.

THE NATURE OF EPIDEMIC CHOLERA.

The most important point connected with cholera is a proper understanding of the relative nature of its cause. To illustrate this, we must advert to a few positions which will be admitted by most medical men. Some diseases are the product of *specific causes;* thus, we see that small-pox will produce small-pox—miasm will produce bilious fever, &c. These, then, are specific causes, because they always produce disease of one kind, as to genus, at least. But we have also *fortuitous causes*, and hence *fortuitous diseases.* Several individuals eat and drink too sumptuously, or use articles pernicious, but all eat the same; presently, one is overtaken with a violent sick head-

ache, another has his accustomed gout, another has an attack of dysentery or common cholera morbus, another a mild diarrhœa. Here is a specimen of a fortuitous cause and fortuitous diseases, and these diseases, so produced, may end fatally. Let us apply this illustration: a person, in an ordinary time of summer, eats unripe fruit, or the like, and has an attack of cholera morbus; this is a fortuitous disease, for we have seen it might have been dysentery from the same cause, &c.; but no one could think of fortuitous cholera becoming epidemic. How, then, does cholera become epidemic? By the operation of some general agent, and that general agent must be specific in its nature. It must have individuality or property, and that property being peculiar, is termed a remote or predisponent cause. If cholera morbus may occur from a fortuitous cause in ordinary times, may we not suppose that it may also occur in times of epidemic cholera, from a fortuitous or exciting cause, and in this way give rise to the belief that persons nursing those affected with the epidemic cholera, caught it from the sick; and such a case may come in, to deceive those who are willing to admit a single fact to prove contagion or infection, in opposition to thousands of things corroborating the non-contagious or non-infectious nature of the epidemic disease. We may remark here, that, in all seasons, and all places where there is malaria, there are many persons whose systems seem scarcely to be impressed with the poison; and, in all specific diseases, the same as in small-pox, there must be susceptibility to the disease. In small-pox, the susceptibility is destroyed by the action of the disease upon the system; and something of the same sort exists in fever and epidemic cholera, at least for certain periods; otherwise, persons who had recovered from an attack would be seized again, upon going out to breathe the same sort of malaria that produced the attack. As regards small-pox, this, too, has its peculiarities, for there have been epidemic seasons when people were more liable to the disease than in some others.

We suppose that susceptibility is as necessary for the production of cholera as the exciting cause, and we everywhere see more or less of the people escape; some have slight attacks, and, in all severe epidemic diseases, there are some malignant

cases, not even excepting influenza. We shall presently see, that this view of the subject is highly important, and calculated to obviate one of the greatest difficulties, we think, in the whole phenomena attending epidemic cholera. We are told by different writers, that in many of the cities (perhaps in all), there was a great number of slight disease of the stomach and bowels while the cholera prevailed, and generally before there was any alarm; many physicians do not consider these as being cases of cholera. These harbingers were seen at Orenburg, St. Petersburg, Sunderland, in Canada and New York; and at the present time (1832), there are perhaps thousands of cases of these forms of disease in Philadelphia, and to an extraordinary extent in Baltimore; and, in intermediate places, much of the same was to be seen. And many physicians tell us, that simultaneously with epidemic cholera we have dysentery, common cholera morbus, and diarrhœa of all grades. Now, if it be admitted that the malignant cholera is an epidemic, to what, agreeably to any rules of reasoning, can we ascribe the milder cases, but to the same cause? either in a less concentrated state, or modified by the habit of body; for, in addition to the necessity of the presence of a condition of susceptibility, there is always required some exciting cause, as fear, fatigue, watching, mental perturbation, intemperance in eating or drinking, or both, or excess in venery.

To our apprehension, we may as well take up the intellect of Bacon, or Newton, and say that none are men who do not come up to their standard of intellect, as to say that because the epidemic cholera, under certain circumstances, becomes malignant, none can be cholera but such as come up to this standard. It is known that great epidemics rule, so to speak, in the dominion of diseases; that a great epidemic once set up, all diseases assume more or less of its livery; and shall we, notwithstanding this law, have three epidemics prevailing at the same time and in the same place? Such a condition of things is not admissible, seeing that we could not easily imagine how three poisons should exist in the air at one and the same time; and the general prevalence of diarrhœa, or what we term cholerine, and cholero-dysentery, shows these diseases to be epidemical.

We believe that wherever cholera prevails epidemically, and both before and during the recurrence of malignant diseases, the stomach and bowels, in particular, of almost every individual in the neighborhood, are impaired more or less, and require a guarded use of whatever is difficult of digestion, and caution in not eating too freely of anything. With all care, we shall have much diarrhœa of various forms, and these affections, the usual forerunners of cholera lethalis (or cholera major), are easily cured, when early attended to. It is our settled conviction that, instead of one-half or one-third of cases of cholera terminating fatally, there is not, in any epidemic of this sort, one fatal case in several hundreds.

We might go on and show that there is no disease uniformly malignant. It is known, notwithstanding the great mortality of the yellow fever of 1793, in Philadelphia, that there was many cases of bilious fevers of the remittent and intermittent type, and over a greater extent of the city than ever before or since.

This state of things is present wherever yellow fever is epidemic. We see small-pox, with its stable character, presenting some mild cases; but, in the main, it is a disease of great mortality. The cholera, in the main, is a disease of mild character, but presents, now and then, some very malignant cases. There is a period, though sometimes very short, in which almost every case of cholera can be arrested; how this is to be done, we will endeavor to point out when we come to speak of the treatment of this disease.

In summing up our views of epidemic cholera, we say, it is a specific disease, depending on a predisponent cause, which is a poison floating in the atmosphere, or existing as an occult principle, that, therefore, there is but one genus, one species in cholera; but there are three well-marked stages: these stages may be more or less blended, or changed from the milder to the malignant, and, being epidemic, are different from common cholera morbus, which arises from a fortuitous cause. We see the disease sometimes very much resembling bilious fever. We may also observe, that, in every season of epidemic yellow fever, cases of common cholera morbus are seen, but they are sometimes from a fortuitous cause.

To make ourselves clearly understood, it is necessary to say a few words respecting existing causes under this head. Information from all countries contributes to show that cholera does not very often assume its malignant form, except in the intemperate, the impoverished, and unclean, or some aggravated exposure or infirmity. The epidemic cholera and the common sporadic, from surfeit or indigestion, do not present anything anomalous in so nearly resembling each other. Cases of these diseases agree in this only, that in both instances the same parts of the body are diseased; the causes are widely different, and yet the symptoms have resemblance, because the same structures are involved. We see phenomena similar in small-pox and other diseases; thus a patient, in the primary fever, has all the symptoms of severe fever, bilious or inflammatory, and it is not until the small-pox presents its pustulation that we recognize its true character. The circumstances attending epidemics are nearly the same in the single individual, and we can only recognize it by its malignant aspect; but the peculiar symptoms of which this malignancy is constituted being epidemic, characterizes cholera major as completely as the eruption of small-pox characterizes that disease, so that a few malignant cases, with many that are milder, establish the epidemic character of cholera major, and the absence of malignant cases, without those peculiar symptoms, establish the character of cholera morbus. And it seems in place to remark here, that, in a practice extensive and of more than forty years' duration, we never, within our recollection, lost a case of cholera morbus, except where it appeared as the prominent symptom of yellow fever, and those cases occur very seldom.

We are as ignorant of the mode of invasion of the choleraic poison as we are of its origin. The most rational view of the subject is, that it enters through the medium of the lungs. We are not disposed to speculate upon things which seem to elude or transcend our means of inquiry or observation. Premonitory signs have preceded all instances of the malignant cases of cholera major, and from the vast number who have the disease mildly, and that few, comparatively, have the malignant symptoms of this disease, who live as they should do,

we are warranted in saying that the poison is mostly in a very dilute state, and operates for some time upon the system before the malignant condition is produced.

Whatever may be its mode of invasion, we find that the derangement arising from the operation of cholera fomites mostly is first perceived in the stomach and bowels, especially the latter; these structures are interrupted in the ordinary secretory and assimilating operations, these functions being dependent upon the splanchnic system of nerves, with the ganglionic centres; this nervous apparatus is disturbed in its economy, and mutual derangement takes place; while the nerves are irritated by the ingesta, the grand sensory is disturbed in its function by the surgelation of the encephalon with blood, and that blood of an abnormal quality.

It is known to physiologists that it is not more necessary that we constantly inhale the atmospherical air, than that the operation for the supply and repair of waste and impairment of our bodies be incessantly going on. And in milder cases, or in the first stage of cholera, there is an interruption of the digestive and assimilating apparatus, and this gives rise to cholera in all its aspects. Arrest the morbid actions before the sensorial energies and the *accretive fluids* are materially impaired, and your patient recovers; suffer the impairment to go on to a certain amount of derangement, and extreme danger or death will be the result. No animal among the higher orders can exist unless the necessary plastic operations are momentarily maintained—speedy death will take place; whenever that nervous energy, which controls the inmost assimilation of the system, fails in its office, we shall have disease of more or less violence, or death, according to the degree of sensorial disturbance.

In the case of an epidemic choleraic contamination of the atmosphere, pathological observation shows that the head becomes surcharged with blood, which has been shown in this work, in the chapter containing the dissections at Hamburg and other places. And this surcharge of the brain is so constantly present after death, that we may safely conclude that this condition prevails during life; the more so, when we see the

total disruption (if we may use the term) of the blood throughout the sanguiferous system; for we believe that the economy of no structure, in the animal system, is more truly vivific than that of the blood as it stands in its multiform relations.

There appears to be good reason for supposing the first link in the catenation of abnormal actions in the phenomena attending cholera, is the great sympathetic system, distributed on the mucous surface of the stomach and intestines. This is no assumption; we see a remarkable connection between the brain and the stomach in cases where a person in good health is about to satisfy hunger, and some very distressing or alarming news comes to hand, appetite is totally banished. Here, then, is an important indication. And we see that, in cases of outbreaks of cholera, how important is tranquillity of mind, and moderation in our diet. Impose as little duty upon the digestive organs as is consistent with health, remembering that too low a diet may also disturb the economy of the system. Take nothing into the stomach that is hard of digestion, or apt to impair the digestion by its quality or quantity. We shall, when we come to treat of the epidemic which prevailed in Baltimore in 1832, show that fruits and articles that are usually eaten raw, did, in an especial manner, disagree, and often the using of such articles was followed so quickly by the most violent symptoms of cholera, as to leave no room to doubt the unfitness of such articles.

It has been found by experience that certain things relating to food, drinks, the condition of our dwellings and premises generally, facilitate the inroads of cholera, and gross abuse of such things not only invites the disease, but gives to the specific poison, by which the disease is constituted, all its malignancy. Here we have a clear indication in guarding against seizure, and we are made sensible of the goodness of the influence of a kind Providence of a condition, in almost all epidemic diseases, that will enable very many to ward off the complaint. In cholera, thousands may inhale the poison which gives rise to that disease, and they suffer nothing but a temporary derangement of health, provided they have recourse to precautionary measures, by avoiding certain things, such as fear, or excessive exertion, whether by mental or corporeal activity, loss of sleep, &c.

The foundation on which we may rest the phenomena attendant upon cholera, is a reduced energy of the distributive portion of the sensorial organs. This reduced state of the nervous energies gives rise to a morbid or preternatural irritability and sensibility, and this is generally of such a nature as not to lead to a state of reaction, or much ordinary febrile action. On the contrary, the essential nature of cholera is, that its early stage depends upon reduced energies of certain portions of the distributive apparatus of the sensory, and this reduced state of the energies leads to spasms—a mere symptom; but we have elsewhere said that the intrinsic nature of cholera is impairment of the vis a tergo, which term, however ancient, conveys to my mind the existence of a power of propulsion, which gives play to distributive sanguification. Whenever propulsion of the blood ceases, the animal body speedily falls into ruin.

It has been imagined by some physicians, notwithstanding the conviction that what is usually called the remote cause of cholera is in the surrounding air, that, nevertheless, under certain circumstances, a poison may be generated in the human body which shall have the same properties as the atmospheric poison, and in this way the disease becomes contagious or infectious. We think this would be contrary to the laws of nature governing chemical combination. How can we suppose that certain elementary matter, produced by an elimination from the surface of the ground, or an atmospherical poison gives rise to a certain disease, and, at the same time, imagine that a poison exactly similar may be produced by or from the living actions of the animal body? Such a supposition is contrary to sound rules of reasoning, which do not admit of similar productions from dissimilar elements or dissimilar causes. Let us admit, for the sake of illustration, that a poison has entered the system, and the body generates another; here, according to all our notions of generation or production, the extraneous matter is one parent, and the body acted on gives another, can we suppose that the offspring or product will be similar to the former? Does not everything show us that parents of dissimilar kinds will produce offspring dif-

fering from both? Nature has been sparing, indeed, in the production of hybrids or mules, and invariably unnatural generation produces offspring having properties *sui generis*. If a poison be generated, and given off by the animal body during the existence of cholera, that poison will be as likely to produce almost any febrile disease as cholera. Epidemic cholera can have but one cause, like all other specific diseases, nor have we any half contagions or infections.

There is a mass of testimony in favor of the non-contagiousness of cholera, which is not to be upset by a few cases brought forward, now and again, which present strong features of the opposite; but surely it is the safest course to adopt, i. e., that it is not infectious. How can we believe that, in large cities, the disease, when it once gains force sufficient to excite alarm, can pass away in a few weeks: the atmosphere is impregnated with the material that all must acknowledge to be the exciting cause of epidemic cholera, and yet we are asked to believe that it passes from body to body. The matter giving rise to cholera is, as far as we know anything positive of its nature, of out-door origin, and cannot be begotten by the living economy, whether in health or sickness of its subjects. It is one of the properties of this poison, that it never exists long in the same place; about two months, we think, is its most usual period in large cities; there have been exceptions: it has sometimes lasted three or four months; but there has been very many instances where cholera has appeared with appalling virulence in small towns, and disappeared in two or three weeks after the fall of, perhaps, half a dozen, a little more or less, of its victims. And we view this as strongly corroborative of its non-contagiousness. If the disease can only exist while there is atmospherical contamination of a peculiar kind, how can we suppose it to cease while nurses, physicians, and neighbors, do the offices necessary for the welfare of the sick? Small-pox presents a very different state of things; for, despite the benefits of vaccination, this disease has existed more or less in London ever since the Jennerian discovery. We repeat, the cause of cholera is atmospherical, being a poisonous principle, electro-choleraic probably. This poison is generally so slightly diffused as to beget

a predisposition or a susceptibility only, and requires the co-operation of malaria, and the combination operates with deadly force. Long continuance of a mild impression, or fierceness of one that is short, gives rise to a period when an explosive train is laid, and nothing but the match is wanting. With this state of things we are sometimes surrounded. A debauch, an over-meal, an alarm, great fatigue, loss of rest or sleep, eating of indigestible articles, in short, whatever is in any way in excess, may give the impulse; and now is seen the destroying disorder which, in almost every case, is only to be cured before the vital properties of our bodies is laid waste, and no longer fit for animating the living frame, nor susceptible of restoration.

PUBLIC MEANS FOR PREVENTION OF CHOLERA.

Of the public means, it may be remarked, in the first place, that the history of the disease, for a series of years, supports the belief, that low or marshy, and crowded and filthy situations, are most subject to cholera. The lower part of towns, particularly where streets, lanes, and cellars are filthy, and along the margin of rivers, &c. In short, in locations where diseases are apt to prevail which have for their cause malaria or miasm. But, notwithstanding the certainty of this obtaining generally, there are some exceptions, where the disorder affects towns, or districts of country, in which miasmatic diseases do not prevail. Cholera is generally arrested, like bilious affections, by winter seasons; but there are a few exceptions. But, in what department of secondary operations in nature do we see absolute uniformity? It is characteristic of this disease, that persons of good or regular habits are much less subject to it than those who disregard the claims of cleanliness, and who partake of sensual indulgences; and this, we believe, is corroborative of the non-contagiousness of the malady before us. Does small-pox, or any other acknowledged contagious disease, look for persons of filthy or faulty habits? We are aware that

small-pox has also some preferences in this respect; but it is as nothing compared to the universality of the freaks of epidemic cholera, and all this is in favor of the opinion that the general atmosphere is the source of cholera.

We should avoid crowded assemblies in epidemic times, and particularly during the presence of that which is the subject of this work. Our countryman, Noah Webster, has, many years since, pointed out the evil which frequently arises in crowded assemblies, in our legislative halls; and we have observed, some years ago, that the Legislature of Maryland suffers much from affections of the chest and throat, although their halls are quite spacious, and we believe it is owing to the collection of impure air, arising from too many lungs operating upon the air of the halls. We have elsewhere endeavored to show that the malaria, which is required for the production of cholera, may probably be generated in the body.

In times of epidemic cholera showing its precursors,—(for these harbingers, we believe, are seen ninety-nine times in the hundred,)—people should not be suffered to crowd into small houses, nor should more than a reasonable number occupy larger houses. At such times, and, indeed, at all times, it would be the interest of the rich landlords to guard against this evil. Dilapidated and rotting houses should be removed, and better put into their places. All such improvements would be conducive to health, as regards febrile diseases in general, as well as in relation to cholera. We here, in 1832, in our journal, anticipate the English Board of Health for 1854.

The precincts of cities are almost always unhealthy, which is mostly owing to filth arising from manufactories, drains, ponds, &c., and much of the evil thence arising could be obviated by proper attention to such locations, removing such things as are most objectionable, and keeping everything clean. It has been seen that persons who occupy low dwellings, cellars in particular, are very liable to cholera; it follows that these situations should be avoided, especially at night; all persons should, therefore, as much as possible, occupy upper rooms at night. Too much pains cannot be taken to keep clean every lane, alley, court, street, yard, dock, cellar, lumber-yard, privy,

&c., and when everything offensive is removed, lime should be freely used,—the common acts most durably, the chlorides of lime and soda act more speedily, but of course less permanently; cellars should be well cleaned and whitewashed. In times of danger, soap should be distributed to the poor, and the proper authorities should see that they keep clean their clothes, their persons, and houses. Where the clothes and bedding are disgustingly filthy, they should be burnt, for here malaria may be generated.

Offals and perishable vegetables should be carefully watched and removed, whenever they become tainted. A great deal of evil would be prevented in cities if refuse matters were more generally burnt, instead of letting them accumulate in heaps, or throwing them in the streets. This is a valuable suggestion of Dr. Rush's. We may have overlooked some things equally important with these we have pointed out, but enough has been said under this head to enable every one to see what is likely to be hurtful.

Among the measures preventive of cholera, we would notice the speedy removal of the poor from neighborhoods in which the disease seems most to prevail. It seems to be known, that in a majority of instances of epidemic cholera, the malignancy of the disease has been confined chiefly to particular neighborhoods, and removal can, therefore, sometimes be effected, much to the relief of the poor and those who provide for them.

MEASURES OF PREVENTION OF A PERSONAL NATURE.

The first thing which presents itself here is the increased liability to cholera from fear. It being a well-attested fact that many persons suffer from this cause, too much pains cannot be taken by every one to regulate their conduct, so as to guard, as far as possible, against it, and endeavor to quiet the apprehensions of the timid. All extremes should be avoided; we should live abstemiously, partaking generally of what we have been accustomed to, or rather what we know to agree best with our stomach, but guarding against too much variety on the same day. Instead of overloading the stomach,

we should take care to eat and drink so as to give the stomach full opportunity to digest, and send away well prepared what is taken in. Persons, in general, should abstain wholly from spirits, wine, malt liquors, and every drink, except water, and not too much of that made cold by ice. Those accustomed to dram-drinking or drunkenness should daily diminish the quantity of stimulus. Physicians and public men, who visit sickly places, or whose duties require great exertion, should be careful to avoid too much fatigue, or night-watching; if done as a source of profit, no more than a reasonable amount of labor should be performed. If humanity demands it, the best results will attend a fair share of labor only; for, by over-exertion, the actors become victims to the disease, and they may leave a void, to the detriment of the community.

Pains should be taken to keep the body clean, and bathing two or three times a week will conduce to health; but too frequent dabbling in water, warm or cold, we think, will be hurtful, and the object being cleansing, persons should not remain in the bath longer than is necessary for that purpose. Avoid the night air and crowded places, also sleeping in lower rooms, or sleeping in small rooms. Nothing, perhaps, is more dangerous than overloading the stomach; too much exertion in the hot sun, and drinking rashly of cold water, when much heated, whether by the sun or labor.

It has been said by Sydenham, that more people die from the effects of cold upon the human body, than perish by pestilence, war, and famine; and Rush has advised, as a rule, that we dress rather too warm than too thinly; and it has been remarked by different writers on cholera, that attention to clothing is all-important. In changeable weather, we should endeavor to conform to the more remarkable changes, especially we should wear a belt of flannel or coarse muslin. Strict attention to the foregoing precautionary measures will afford much security; and whenever exposed to a choleraic atmosphere, we should be moderate and regular in all things, remembering that we are in some degree invalids, seeing that while the atmosphere disposes the body to cholera, there are

many things about us that lead to or from the disease; as we shall choose to avoid or approach, so will be mostly our lot.

SYMPTOMS OF EPIDEMIC CHOLERA.

In entering upon this subject, it becomes necessary to remind our readers of the view which we presented when speaking of the nature of epidemic cholera, i. e., that there is only one disease, but three different stages of it. To illustrate this part of our subject, we shall not stop to notice the different names that have been applied to the malady, as Asiatic, Russian, or spasmodic. These names are founded on accidental circumstances, and do not serve to characterize the disease. The remarkable degree of sinking, which attends all malignant cases, would serve to express the condition then present; but when we take a view of the whole subject, we readily see how illy adapted is the term asphyxia, to express the whole career of a case of cholera. The truth is, no one name can be applied which will serve to express the character of the disease. Epidemic cholera signifies its most prominent and steady trait, therefore it should have the preference.

We have been led to consider epidemic cholera as the most suitable epithet for the disease under consideration; and the disease appearing in different stages, but being the result of one cause, we opine the most judicious arrangement which we can make of the subject is to distinguish the disease by the term epidemic cholera, and divide into different stages *cholerine*, *cholero-dysentery*, and *malignant cholera*, or *cholera lethalis*. We are informed by physicians, who saw the epidemic at Orenburg, St. Petersburg, Sunderland, Montreal, New York, Hamburg, Philadelphia, and much of the same in Baltimore, that diarrhœa, and other bowel affections, also affections of the stomach, prevailed pretty extensively some time prior to the outbreak of cholera. So true was this, in Baltimore, that these milder stages prevailed for some weeks before the epidemic as-

sumed its malignant aspect, and, while it raged, the mild stages of the disease bore a vast majority over those that were malignant.

OF THE CHOLERINE STAGE OF EPIDEMIC CHOLERA.

This usually begins with sick stomach, sometimes vomiting, and a sense of tension around the abdomen, and about the stomach, more or less purging, sometimes severe; the matter vomited is mostly of a bilious nature at first, sometimes acid; and when the vomiting is not soon checked, the matter ejected or passed by stool is watery or slimy. The first discharges from the bowels are often, at first, in greater part fæcal, then bilious; in some instances, they had some resemblance to coffee-grounds. Most patients spoke of the stools being watery, sometimes light-colored, sometimes, but seldom, dark. In most cases, the discharges, both upwards and downwards, were less copious than in most severe cases of common cholera morbus, in one case of exception we were assured that several quarts had been passed in one night.

We did not find arterial excitement which seemed to require the lancet, but we sometimes found the skin warm, with some febrile action in the system. In all these cases, the tongue was thickly coated with a yellow fur; the head was seldom affected with pain or distress; respiration not disturbed; prostration not great; stomach much disposed to reject such medicines as were given. Some cases—most, indeed, were attended with cold skin and clammy perspiration; in these cases the arterial action was a good deal reduced, and the tongue had mostly a thick white coating. The speed with which other symptoms abated upon using remedies, was not more remarkable than the clearing off of the tongue; we have seen the tongue extremely foul, and on the second day afterwards, it has been perfectly clean—a sure indication always of a mild disease.

CHOLERO-DYSENTERY STAGE OF EPIDEMIC CHOLERA.

This form of the disease was pretty generally attended with the symptoms belonging to cholerine. The most remarkable peculiarities were greater arterial action, a deeper yellow coating of the tongue, as the predominating cast. There was often pain and heaviness of the head; sometimes sickness at stomach, mostly but slight; and we never saw anything like severe vomiting. The alvine discharges were small, and consisted principally of mucus, streaked more or less with blood; in a very few cases the discharge of blood was considerable. We saw one case of severe vomiting of blood. We met with a few cases of this stage of the disease which required one pretty free bleeding, never more; the cleaning off the tongue was equally remarkable as in cholerine.

We should come near to a true view, as regards medical treatment, by viewing cholerine and cholero-dysentery as mild cases of common cholera morbus and dysentery proper. We did not see a single case in which we were apprehensive of danger, and we saw but few cases that became protracted for several days. In most cases of cholerine and dysentery, the patients recovered in two or three days, sometimes in a few hours. Our patients were nearly all adults; indeed, it has so happened (1832), that we have had less cholera infantum than usual during the reign of cholera.

THE MALIGNANT OR LETHALIS STAGE OF EPIDEMIC CHOLERA.

The following case, which occurred at Hamburg, is one of the most perfect cases that can be found. Those conversant with diseases must be aware of the great irregularity of symptoms in most diseases, and in epidemics more especially. We need not dwell upon this point, further than to cite the fact, with a view of illustrating our opinion, with respect to the cir-

cumstance that, notwithstanding the diversity of symptoms, every disease is characterized by certain pathognomonic symptoms, and as the case shall present more of these signs, so shall it be more pure or perfect of its kind. In this way we get a sort of standard which serves to distinguish one disease from others; and, although we meet with many anomalies, still, all that present certain signs are referable to some one disease; and, as the signs shall more or less resemble the *standard phenomena*, so is it more or less perfect. We present the following case as one of the most perfect cases of malignant cholera, and, being so, may serve to characterize the disease, provided we notice a few anomalies, which we shall do as we proceed. The case in view has been noticed in our translation of Dr. Frickë's pamphlet on cholera at Hamburg; but we deem the case of so much importance as a genuine case of this malady, that we have thought proper to repeat it here.

This was the case of Anna Garrasen, aged thirty-five years, and an occupant of a deep cellar. She sickened on the 10th of October, 1831, and was taken to the cholera hospital. The day before her attack she was quite well, and slept well the night before it. She was seized with violent purging and vomiting, and very severe pains in the abdomen. When she was admitted, the whole body and the tongue were ice-cold; the face looked as if frozen; the hands were blue with cold; the eyes deeply sunken in; the tongue coated whitish, but was moist; the pulse imperceptible; purging and vomiting continued; alvine discharges thin and colorless; great anxiety; violent cramps, particularly in the feet; much distress about the precordia, especially towards the back. She was immediately subjected to an alcoholic bath, at the temperature of 35° R. The skin became moist, but not warm. By making four large orifices in the arms, about half a pint of thick, tar-like blood was obtained. An hour afterwards, she thought herself much better, but had great distress about the precordia. The spasms, the vomiting, and purging went on; the skin now a little less cold, but there was cold sweat; expression of face a little improved.

Evening. 6 o'clock. The face a little warmer, and not so

much of the expression of extreme coldness, and covered with a warmer perspiration; countenance improved, and less characteristic of choleraic distortion; voice improved; no purging nor vomiting; tongue coated white, and is moist and warm; respiration more free; *sinapisms produced great suffering;* pulse barely perceptible; legs warm to the knees, below quite cold; frequent spasms, but less violent than they have been. The great pain attending the effects of the sinapisms, requires a passing notice. Dr. Diffenbauch says that, however reduced the circulation, the sensibility of the skin is not lessened. This may sometimes call for especial attention, so that we do not add to the prostration of the patient, by the pain from external stimulants. In our own person, in a state of great prostration from bilious fever, mustard was applied to the epigastrium, and the pain had a most prostrating effect, and if the mustard had not been taken off speedily, syncope would have taken place, from which, we believe, great danger might have arisen.

October 11th. Day after admission. The patient has had but little sleep, and has vomited and purged several times; the cramps less frequent; *has voided no urine;* the upper part of the body covered with sweat; the lower extremities cold; the hands livid and cold; fingers drawn inwards; pulse imperceptible. She had taken some very small doses of calomel yesterday, and, besides the alcoholic bath, warm jugs were applied. At noon the symptoms have become worse, in addition to pulselessness and laborious respiration; the whole body is ice-cold, and the hands livid. The alcoholic bath was used at 35° R., and she remained in 25 minutes, and felt better; the skin again became moist, but in an hour after this, she presented the aspect of a person in typhus fever, and death came to her relief at 3 o'clock, thirty-three or four hours after the attack.

In the case of Anna Garrasen, we have a real malignant disorder, remarkable only for not having been preceded by cholerine or dysentery. It is said she slept well the night before the attack. This may have been so, but great doubt exists as to the accuracy of the answers of people of her condition and

habits. All diseases, however, occasionally present anomalies, and one occurring here would not invalidate the almost uniform opposite. We have already given an account of the epidemic cholera at Hamburg, and its first irruption in that city, and we have there detailed the result of a number of dissections among them, that of Anna Garrasen, to which we refer.

The cholera at Hamburg and other places in Europe, 1831, was attended by a strong tendency to turgescence in the head, and this in a greater degree than obtained in Baltimore in 1832, and through other parts of the United States. We were assured by several physicians of eminence, in Germany and in Sweden, that in all febrile diseases in those countries the brain suffers much; "So much so," said Dr. Westring, of Götheborg, "that the theory of Clutterbuck would come nearer the truth than that of Broussais." But we have seen, we think, a much greater tendency to the brain in the present year (1854) at Columbia, and in perhaps five or six cases at York, Pennsylvania, in which there were symptoms showing such a condition. We have not seen any dissection of these cases. These patients generally retained their senses till almost the last moment of their existence; but there is a marked indifference as to the issue when the case is far advanced towards the fatal termination. This symptom serves strongly to characterize epidemic cholera, and comports with the appearance of dissections at Hamburg, the cerebellum and base of the brain being much more surcharged with blood and serum than the cerebrum.

In almost every case of dissection after cholera, there has been observed an absence of bile in the intestines, and a quantity of it in the gall-bladder, so much, often, as to render that viscus turgid, and bilious matters are sometimes seen passing from the intestines in cholerine, and cholero-dysentery; this is merely what happens to be present in the intestines at the time of the seizure, and when that is passed off the discharges become of a light or whitish color; but as the disease advances, the discharges become more serous, more copious, and they have the appearance of whey or rice-water, attended with sinking prostration, cramps in the lower extremities or abdomen, and we have now *a most critical stage*. It is now that half an

hour or hour, perhaps sometimes less, that the issues of life and death are thrown, as it were, upon an equipoise, and the preponderance is on the side of death; but even at this point some cases may be arrested.

We mean here by the term malignant, a state of deadliness, and of a general lethalic nature, something like what we see in yellow fever and in typhus gravior; the malignancy in cholera seems to consist in a suppression of the action of the sensorial apparatus, by which the blood deteriorates, and is no longer fit for sustaining the intrinsic operations of the circulation. A state of asphyxia gradually approaches, and, once present, death is at hand; for the circulation being in a great degree suspended, can almost never be restored, because the blood has lost both its vital properties and its wonted fluidity. Asphyxia, we are aware, may exist as a disease, as was seen in the case of John Hunter. This great man was affected with a disease of the heart, and was known to lay the better part of an hour pulseless, and would then revive. In these cases we may suppose that the heart and other organs resume their office after being suspended for a short time, because the blood is in a healthy condition, and the brain free from turgescence. But, in the last stage of cholera, there is a deadly tendency to unequal distribution of the blood; among other evils, coagulation often takes place, nor must we forget the important part the retention of the urea in the blood bears in the train of evils. The heart failing in its function, the capillaries, the lungs, the kidneys, are crippled, and add to the degenerating tendencies, and there is nothing left to second the efforts of the physician.

We have already pointed out the precautionary measures, both public and personal, in this work, that are necessary to be observed with a view to prevention. So much depending upon these precautions, we shall make a few remarks before entering upon our account of the epidemic cholera of 1832 in Baltimore. Let every one, who can conscientiously do it, endeavor to impress on the minds of the ignorant and the timid that there is no other than a mild poison to fear, and that too much pains cannot be taken to render the disease mild and safe. It should be remembered from day to day, and from

hour to hour, that this poison renders every one, in some degree, an invalid, and that the impairment is in the digestive function, as we hope we have proved in these sheets. We must not only live carefully, as regards *quality*, but we must live abstemiously. Those who are aware of the vast advantages that were obtained by strict abstinence in the inoculation for small-pox, can readily appreciate the necessity and advantage of pursuing a similar course in the present instance. In the time of the epidemic in Baltimore, in 1832, we (the writer) reduced the quantity of our food at least one-half, and observed much greater simplicity in the selection than usual. There may be persons whose systems are in a reduced state, who had better improve their diet, and they will be benefited by the use of a little increase in animal food. The substance of what we have written at present, 1854, was written and published in the year 1832, and contains every precautionary measure set forth by the English Board of Health for 1854, as published in the Medical News of Philadelphia. We shall, however, postpone our notice of that paper and the review of Dr. Berg's report on cholera in Sweden in the year 1850, until we shall have given our account and our observations on the great choleraic epidemic in Baltimore in the year 1832.

EPIDEMIC CHOLERA IN BALTIMORE IN THE YEAR 1832.

There is an old saying, that "an ounce of prevention is better than a pound of cure;" admit this, as a truth, and it is but a mite in comparison with the disparity between the means of cure of epidemic cholera and the prevention of it. Entertaining these views, while we acted as consulting physician for the city of Baltimore, we never lost sight of the importance of the advantages that were to be derived from the constant application of preventive measures.

Our attention was early awakened to the breaking out, the advances, and the character of cholera, as it made its appearance more and more near to our country and to our city.

We shall suspend our observations of a directly medical character, to make way for a brief historical account of the disease, and the measures adopted by the city authorities in anticipation, with the view, as far as possible, of being ready.

By this sketch, we hope to prove that the authorities, alive to every sense of humanity, spared no pains to prepare means of defence, and that it was their good fortune to be instrumental in adopting the most salutary measures of which the case admitted.

We are aware, that, among the many attempts that have been made to throw light on the truly important subject before us, there has been a redundancy of commonplace matter; but, after all, we apprehend that this was the most ready and best mode of acquiring a correct knowledge of the disease, and to ascertain the best method of treatment. We think it will be admitted by most medical inquirers, that epidemic cholera, like other epidemics, varies in its nature, as it shall happen to be associated with peculiarities of location, of seasons, of modes of living, and many casual occurrences. It will follow, on this view, that, should the cholera continue to prevail, much time and observation will be necessary to fix, if, indeed, such a thing is possible, its true character; for it is truly of a protean nature.

The disease of 1832 bore a good deal of similitude to yellow fever in its symptoms, but not at all in its general character. By measures well devised and well executed, our city was relieved of an appalling foe, with an expenditure of money very moderate in amount, and with a mortality which, under circumstances present, leaves much room for thankfulness to Heaven for our having been relieved, after an amount of mortality far below what we had reason to apprehend, judging of what we had previously known of this destroyer of human life.

In the month of February, 1832, the consulting physician for Baltimore addressed a communication to the Mayor and Board of Health, on the subject of cholera, in which he offered some facts and reflections in support of an epidemic constitution of the atmosphere, which was about to control our diseases. February 19th, 1832, the consulting physician reported the following case to the authorities:

W. W. retired to bed at his usual hour, and awoke some time in the night suffering from severe cramps in the stomach, hands, and legs. Not wishing to disturb the family, he bore his sufferings; and, after some hours continuance, those symptoms subsided, and in the morning he felt well enough to rise and walk out. Remained pretty well during the day, and retired to bed without complaint; but early in the morning he was seized with sick stomach, to which was soon added diarrhœa and severe vomiting, all which harassed him for several hours; by the mouth he ejected large quantities of greenish bile, and, per anum, considerable quantities of watery fluid, mixed with whitish mucus. The cramps continued severe in the stomach, hands and legs, and the fingers were painfully drawn in. We were absent, and did not see the patient for several hours, during which time he was under the care of another physician. We found him very much prostrated, skin very cool, face remarkably pale, pulse feeble and small, tongue slightly coated whitish. Severe pain in the region of the stomach, with spasms as often as he attempted to stir; purging and vomiting considerably abated, but the stomach still very sick. We prescribed as follows: ℞. Carb. Sodæ ʒj; Ol. Sassfr., gt. v; Tinct. Opii, gt. l; Aq. pur. ℥vj. Table-spoonful every hour, beginning a few minutes after taking the following: R. Submur. Hydr. ϑj., ft. pil. iij., one to be taken every hour. In the evening, three doses of the mixture have been taken and the pills, and he is comfortable. This patient was found convalescent next morning, having passed large quantities of bilious matter, brought away, no doubt, by the calomel.

It was now and then rumored, by different physicians, during the winter, that they had seen cholera; none were reported to the Board of Health; during the winter, nothing further remarkable occurred, under our own notice, till the month of May, at which time disease of the stomach and bowels became common. On the 7th of June arrived the ship Brenda, from Liverpool, with one hundred and twenty-three passengers, of whom nineteen died on board; but the disease had entirely disappeared from the ship before her arrival.

This arrival gave rise to great excitement at the Point (the

lower part of Baltimore), and placed the health officer in a very unpleasant situation. A large portion of the people had formed their opinions, and many were disposed to pay no respect to the health officer or any one else, and the most unreasonable and extravagant projects were proposed for warding off the supposed contagious cholera. The health officer was early convinced that there was no risk of importing cholera; but prudence, and, indeed, public safety, required that the prejudices of the people should be respected. No one could tell how soon the disease might make its appearance, and accidental coincidence, as to the arrival of shipping and the disease, might have led to wrong impressions, and in this way, for a time, the truth might have been obscured, and to many entirely concealed. Upon the whole, prudence dictated the propriety of conforming to the wishes of the people. Such were the motives which influenced the consulting physician, although his mind was wholly made up as to non-contagion, and we know that such were the motives of the Board of Health in sustaining the health officer in his quarantine measures. There was, however, another reason for adopting every precaution to guard against the admission of passengers or shipping, under any circumstances, without examination. Some of our sister cities were prepossessed with the belief of the importability of cholera; it therefore became necessary, as well on account of the respect due our neighbors, as in self-defence, to adopt the same measures of defence as if we had been contagionists. We saw here that a refusal, on our part, might have shut us out from other ports. Hence it was, that the Baltimore Board of Health regularly and vigilantly enforced quarantine regulations against cholera, when the Mayor, Board of Health, Health Officer, and the Consulting Physician, were all non-contagionists. While some other cities were trusting to prohibitory measures in considerable degree, we were engaged at an early period in improving the condition of the city by the removal of everything which might tend to contaminate the atmosphere. In these sanitary measures, our City Councils early showed a becoming zeal for the employment of preventive measures.

The City Councils were convened by the Mayor (Col. Wm.

Stewart) in the month of June, and an ordinance was passed, and obtained the signature of the Mayor on the 26th of June.

Section 1st provides that every person arriving from sea, or coastwise, from a foreign country, or any place where any contagious disease existed, should be detained at the quarantine ground, now removed to a distance not less than a mile below the fort. Section 2d provides that every vessel, of every description, coming from any port within or without the United States, where any dangerous or contagious disease exists, and every vessel in which any contagious or dangerous disease existed, within thirty days of her arrival in the Patapsco River, shall remain at anchorage to be designated as aforesaid, at least fourteen days. Section 3d provides against vessels which, having sailed for other ports, afterwards altered their destination, with intent to land at Baltimore. Under such circumstances, they were compelled to ride quarantine at least thirty days; and a discretionary power was given the health-officer to detain longer, if deemed necessary.

Section 4th provides, that no person shall be brought into the city of Baltimore within fourteen days of their arrival from a foreign country. Sections 5th and 6th provide severe penalties for violations of any of the foregoing ordinances. Section 7th gives a discretionary power to the health-officer to permit persons to go on shore, provided ample security could be given that they would not remain within three miles of the city, nor come into it.

With a view to relieve all passengers, as far as circumstances would allow, from all unnecessary restraint or privation, a steamboat was procured for the purpose of relieving crowded vessels, and affording comfort to any that might be sick; and another health officer was added to the Quarantine office. By these measures much was done to render the situation of persons detained as comfortable as the nature of the case would admit, and, no doubt, the health of the passengers was thereby essentially promoted. The value of these measures may be estimated when we inform our readers, that during six months that our quarantine existed at Baltimore, beginning with the first of May, 11,946 passengers arrived at quarantine, and *there was not a solitary case of cholera* of malignant or milder

aspect at the quarantine or among the shipping; a fact which, while it speaks to the praise of the health officer, tends irresistibly to prove the non-contagious and non-migratory nature of the epidemic cholera of 1832 in Baltimore.

On the 7th of July, the City Councils of Baltimore passed ordinances in anticipation of the cholera, which was seen to be coming towards that city. It was enacted and provided: 1st, That the usual number of superintendents of streets be doubled. 2d, They were required to visit twice a week every street, lane, or alley, public or private, and have them scraped and swept, and filth or dirt to be immediately removed. 3d, Cellars and other places to be whitewashed wherever necessary. 4th, To visit, twice a week, all vacant lots, lumber-yards, brick-yards, tan-yards, slaughter-houses, manufactories, distilleries, cattle-yards and hog-pens, and see to their purification. 5th, All gutters to be examined and repaired, or the course of the water to be altered, should it be deemed necessary. 6th, Fire-plugs of the hydrants to be opened twice a week, and gutters well washed out. 7th, No stagnant water to be sprinkled on the streets. 8th, All vaults and privies to be examined and limed, should it be required to improve their condition. 9th, Street manure, when removed, to be limed where deposited. 10th, Discretion given to the Board of Health to continue these regulations till 31st of October. 11th, Board of Health authorized to engage the Maryland Hospital, and make preparation for cholera patients by preparing bedding, &c., and also fit up as many houses within the city as may be thought necessary. 12th, Consulting physician and Board of Health directed to appoint physicians, to be stationed at the hospitals. 13th, Authorized the Mayor to appoint an apothecary in each ward, where medicines could be had, at all hours, for sick of cholera, at the city expense. The above regulations were faithfully carried out, and all low or wet places, mouths of sewers, &c., well limed. These measures, it will be seen, commenced early in July, but they did not prevent the occurrence of cholera early in the second week of August; but no doubt four weeks, bestowed in the purification of the things within, must have improved the atmosphere of the city, and lessened both the extent and the mortality of the disease.

It will be seen, by reference to section 11th, that the Board of Health, with the approbation of the Mayor, had power given to them to rent or erect as many buildings as might, by them, be deemed necessary, and provision was also made for furnishing every building thus rented or erected, to be fitted up with the requisite bedding, &c., &c., and also appoint a physician for each place. It is easily seen what an enormous expense might thus have been incurred under an ordinance so liberal.

The consulting physician, aware of the great expense which would attend the establishment of any considerable number of hospitals (twelve were designated), and aware, too, of the difficulty of locating these buildings to the wants or convenience of the poor, and believing that none but large, airy buildings were suitable for cholera hospitals, used his influence with the Mayor and Councils, to limit the hospitals to two, to which should be added a cholera dispensary, and one physician for each of the twelve wards should be appointed. Provision having been made by the City Councils for this purpose, on the 7th of July, the Mayor appointed the physicians accordingly, leaving the whole choice to the consulting physician.

These physicians, who were all gentlemen of good experience, were appointed on the 13th of July, and held themselves in readiness to act when called on; but their services did not begin till the second week of August. So far as we have been informed, the first case of malignant cholera occurred in Baltimore, on the 4th of August, 1832. On that day, a little girl, about seven years of age, died suddenly; but we were not aware, at the time, that she died of cholera. She was of respectable parentage, and in a neighborhood where cholera was not likely, from appearance, to show itself, being a very respectable neighborhood, and having clean and airy buildings; but there were several deaths afterwards in the location designated, which was at the corners of Liberty and Baltimore Streets. On the same day of the death above noticed, there died an old colored man, aged 84 years. This case, at the time, we believed to be cholera; we saw him a few hours before his death. One of our most respectable physicians insisted

that this was a case of common cholera morbus. A few days after this death, we were requested by Dr. Roberts to see a white boy affected with some peculiarity of symptoms, having severe vomiting and purging. He had eaten to excess of green corn and other vegetables the day before we saw him. The attack was in the night, and the doctor did not see him till morning, when he was greatly prostrated. We saw him in the forenoon, and found him greatly prostrated; he was cold, and almost pulseless, the skin shrivelled, and there was a singular haggard appearance in the face—a strange blending of the features of youth and the contractions of old age. Death closed the scene.

On the 9th of August, the Mayor called a meeting of the physicians of the city, which was well attended. Nothing of much importance grew out of the meeting. It was found that but few of the physicians had seen any cases having the aspect of cholera in its intense stage; diarrhœa was common. Several of the physicians present were decidedly opposed to any acknowledgment of anything like a cholera epidemic in the city. Indeed, an attempt was made to pass a resolution, declaring that cholera did not exist in our city. This measure was opposed by the consulting physician, who assured his brethren that he had seen cases of cholera at hospital No. 1. The first patient died. He asserted that this case presented symptoms which he had never seen in a practice of upwards of thirty years. He urged that he had seen cases whose aspect was new to him, and preceded as they were by, and associated with cholerine, prevailing in the city, there could no longer be any hope of escaping the epidemic, which was then making inroads through our country. The meeting, by a small majority, decided that the cholera did exist to some extent in the city.

On the 13th of August, twelve deaths from cholera were reported by the Board of Health. On the 20th, fifty-five cases had occurred. August 10th, the Mayor appointed, agreeably to an ordinance previously enacted, an apothecary in each ward, by whom medicine was to be furnished to the ward physicians, and these physicians were now set to business. They did their duty well; but vigilance and zealous devotion to the sick was

not confined to the appointees, but many of our physicians of the city deserved the praise and thanks of the citizens, for their philanthropic devotion to the sufferings of the poor. We had nearly one hundred physicians in Baltimore, and although a few had the disease, but one of them died—what a stumbling-block to contagionists!

It was the duty of the ward physicians to attend all those who were unable to pay physicians, or unwilling to go to an hospital. A very large class of people, in time of an epidemic, become more or less panic-struck; a great many came under this dispensary rule, and, no doubt, very many lives were thus saved. Many of the decent poor were not willing to be removed, and many would rather have perished at home, than leave it to go to an hospital. And, indeed, a very great number of cases occurred where life would have been lost by the delay of going to an hospital, to say nothing of the fatigue of removal. In a word, this dispensary establishment was eminently beneficial to the sick, and in view of expense, the saving was immense.

There died of epidemic cholera in Baltimore, in 1832, 853 persons (out of a population of 160,000). A very great majority of those who died were of the most worthless; but a few of our respectable citizens fell victims to this scourge of humanity.

A very great majority of the police officers, our merchants and citizens generally, early espoused the belief of cholera being an epidemic, not communicable by contagion; such a conviction prevailing very generally, led to important consequences; since, instead of relying on prohibitory laws or measures, they turned their attention to measures for purification of the atmosphere; and this, some weeks in anticipation of what they knew would come. The consulting physician used every exertion to impress this upon the public.

It may not be unimportant to inform our readers, that our measures were not more remarkable for their efficiency, than they were for the economy with which they were conducted on an extensive scale, to a happy termination. The City Councils provided a fund of forty thousand dollars. This was in part expended on permanent improvements; fourteen thousand

dollars were expended in repairing gutters, &c.; the balance was found sufficient for all our measures of purification, and the most ample provision for the sick poor. When we look to our sister cities, and compare expenditures for cholera, and see the relief that was carried to every poor man's house, we may feel proud that our plans, which were novel, had answered so well. New York expended upwards of two hundred thousand dollars, and Philadelphia one hundred thousand dollars, for cholera purposes in 1832.

BOARDS OF HEALTH OF BALTIMORE AND SAVANNAH.

The Board of Health of Savannah having addressed the Board of Health of Baltimore, requesting such information as they might be able to give, respecting cholera; and the consulting physician of Baltimore being very extensively engaged, the matter was referred to Dr. Carrere, under the supervision of the former. The Board of Health of Baltimore say: "The enclosed statement, made by Dr. Carrere, at Hospital No. 2, may be relied on as strictly correct; the treatment has been in practice to considerable extent, and has been found very successful. The Board have the satisfaction to inform you, that the cholera is abating in our city, and we have good reason to believe, that if the citizens could be prevailed on to refrain from the use of fruits and vegetables of every description, either raw or cooked, the disease would in a few days disappear.

"By order,
"DAVID HARRIS,
"Secretary.

"September 25, 1832."

Letter of Dr. Carrere.—"The disease I am disposed to believe to be of a bilious nature, of an aggravated form. Those laboring under it, have generally had some affection of the bowels (either in the form of diarrhœa or dysentery), for one or more days prior to the rice-water discharges by the mouth or stool.

When taken, the patients generally complain of an oppression at the præcordia, spasms of the stomach, arms and legs, pain in the head and back; tongue furred white or yellow; no urine after the attack; pulse full and tense. In such cases I have derived the greatest benefit from the free use of the lancet, until the spasms and pain in the head and back are relieved, and until there is a change in the color of the blood, which is at first of a very black color; then commence with calomel and opium, in doses of ten to twenty grains of the former with one-half to three grains of the latter, for the first dose; then calomel five grains, nit. pot. grains ten every half hour, till there are bilious discharges; this to be assisted by castor oil, senna, manna, salts, rhubarb, aloes, &c. Should there be torpor of the bowels, which sometimes happens, scammony, gamboge, or croton oil have been serviceable. In cases of the yellow coating on the tongue, I have been obliged to use the aloes for a much longer time than usual. The nitrate of potass I have generally found to produce the secretion of urine in a day or two.

In the collapsed stage, we have the rice-water discharges very profuse; pulse feeble, and in some cases barely perceptible; in others absent; spasms of the stomach, arms, and legs; tongue cold as ice; oppression at the præcordia; extremities cold, and bathed in cold clammy sweat; great thirst and sense of heat, when the whole surface, to the physician, is as cold as ice; they are constantly asking for cold water, even until a few minutes before death: when it has been given to them, it invariably produces great restlessness.

In such cases we commence with calomel and opium for the first dose; then calomel and nitre were continued as in the first stage. Where ptyalism took place, I have generally found the patient to recover. In cases where they were bathed in cold clammy sweats, I have derived the greatest benefit from the use of warm lard, well rubbed in, on the arms and legs; and repeated as often as it is absorbed, or the perspiration returns, always previously drying the parts well with a towel or piece of flannel. To allay the irritability of the stomach, I have made use of the following: ℞ Carb. Soda ʒj; Ol. Sassafr.

gtt. v., tinct. opii gtt. lxx., aqua pur. ℥vj. Table spoonful to be given every half hour, hour, or two hours, according to circumstances; to be assisted by the effervescing mixture; sinapisms and epispastics. For the suggestion of the lard, I am indebted to the consulting physician, Dr. H. G. Jameson. Dry heat has been applied to the extremities; but I cannot say much in favor of it, owing to the great restlessness of the patients. Tonics and stimulants have been tried, but were not found useful, and have been laid aside for upwards of a month. During convalescence great care should be paid to diet. Three patients who were doing very well for five days, to each of whom a very small piece of bread was given, relapsed in a few hours after eating it and died."

"Post-mortem Examinations.—In general, I have found the brain very much injected, especially in persons of intemperate habits; the lungs were generally found flaccid, nearly natural in color; the heart; generally speaking, bloodless; when any was found, it was of a very black color, and viscid; the liver pale, and little or no blood in it; the gall-bladder generally distended with viscid bile; the stomach very much congested, and presented blotches, sometimes dark; generally reddened by injection of the inner coat; the speen bloodless; the intestines very much congested, especially the ileum, which was reddened; the kidneys very flaccid; no urine, or urinous smell; bladder contracted to the size of a walnut."

Dr. Mackenzie, at Hospital No. 1, furnishes us with the following list of periods at which death took place, after the admission of patients:—Three died in 15 minutes; three in 20 minutes; one in 30 minutes; one in 40 minutes; three died in about an hour; three in 2 hours; one in 3 hours; one in 4 hours; two in 5 hours; three in 7 hours; two in 8 hours; two in 9 hours; two in 11 hours; one in 14 hours; one in 15 hours; one in 16 hours; three in 18 hours; eleven died in 2 days; four in 3 days; six in 4 days; four in 5 days; two in 6 days; three in 7 days; two in 9 days; one in 11 days; one in 12 days; one in 18 days. Admitted 147, died 68, cured 79.

Dr. Carrere, Hospital No. 2, reports that two died in five minutes after admission; one in 30 minutes; two in 1 hour;

four in 2 hours; four in 3 hours; five in 4 hours; four in 5 hours; three in 6 hours; two in 7 hours; four in 8 hours; two in 9 hours; three in 10 hours; four in 13 hours; two in 14 hours; one in 15 hours; seven in 1 day; two in 2 days; two in 3 days; two in 4 days; three in 5 days; two in 7 days; one in 11 days; two in 12 days; one in 16 days. Total 145, died 65, cured 80. Grand total in three hospitals, 386. Number greatly lessened by the dispensary.

We deem it proper to give an abstract of the streets, lanes, and alleys, from which the patients were brought to the cholera hospitals; by this abstract it appears that patients were brought from upwards of eighty different places, and the greatest number from any one street was fourteen from High Street. These admissions run through a period of fifty days; many of them from quite retired places, remote from any free communication; and, except what was done at the quarantine, everything about our municipal regulations and hospitals, was done under the belief of non-contagion, nor was there one case that might serve to invalidate that opinion.

HOSPITAL PRACTICE IN THE EPIDEMIC CHOLERA OF 1832.

The practice, which gradually settled down to a good share of uniformity, and, we think, will compare favorably with anything which has been employed up to the present time, will be best illustrated by a diary of cases, and their treatment, through a couple of pages. The reader will not lose sight of the character of the patients that were inmates of our hospitals; many of them were moribund when brought in, or the disease far advanced, and a great majority were persons of intemperate habits. The following diary was kept by Dr. Carrere, who was stationed at Hospital No. 2.

Aug. 10th, 1832. Betty Buckler, æt. forty (Charles and Lombard Streets). When she entered the hospital she was intoxicated. Blood had been taken, and a mustard plaster applied to the epigastrium; pain in the head and stomach, and

sickness at the stomach; tongue slightly furred; bowels constipated; took the following: ℞. Sub. Carb. Sodæ, ʒj.; Ol. Sassafr. gtt. v.; Tinct. Opii, gtt. lxx.; Aqua, ℥vj. Table-spoonful every hour. Towards evening, pain in the head and stomach, and sickness much relieved. ℞. Subm. Hydr., gr. x. at bed-time. 11th. Rested during the night; pains and sickness have nearly left her; the medicine having operated, she was much relieved. 14th. Complains of headache; tongue furred. ℞. Calomel and aloes, ten and ten. 15th. Tongue furred; bowels not well opened. Calomel and aloes; bowels opened; stools bilious; feels better. 16th. Feels much better; took nourishment. ℞. ʒj. tinct. gentian., three times a day. 17th. Convalescent.

August 10th. Aaron ——, æt. thirty. Mustard had been applied to the wrists, thighs, and epigastrium. Tongue moist; extremities cold; voice husky; had been eating a quantity of water-melon; skin on the hands shrivelled; in articulo mortis when brought in; saline injections; the temporal artery was opened, and a pint of blood was obtained. He came in about eleven o'clock, and died about two. We shall defer our remarks on the saline injections, and also the dissection of this subject, till we come to their appropriate places.

Aug. 10th. Mr. Cooper. Stomach irritable, vomits occasionally; purging two days; evacuations bilious; tongue furred. At two o'clock, took Subm. Hydr. ℈j.; sinapisms applied to the epigastrium; vomiting has ceased; continue mixture, saline. ℞. Ol. Ricini, ℥ij., also calomel and aloes. 12th. Stomach very irritable; sinapisms applied to the epigastrium; effervescing mixture, which quieted the stomach, and he took and retained some chicken-water. 13th. Better in every respect. Tinct. Gentian., ʒj., every three hours, with some brandy. 15th. Discharged convalescent.

Aug. 11th. Saml. Cheers, æt. thirty-two, has been unwell a day or two with vomiting and purging; what was thrown up was similar to rice-water, that passed by stool, *curdled;* cramps of stomach and extremities. Saline mixture (already noticed, of Carb. Sodæ, Ol. Sassafras, and Tinct. Opii, &c.) Sinapisms applied to the epigastrium and extremities. ℞. Camph.,

gr. ij.; Calomel, gr. xx. At two o'clock, an injection was administered, but to no purpose. Half-past two o'clock, one drop croton oil and one-fourth grain opium; took two doses. A tobacco injection was then given; relieved the spasms in the stomach; produced a slight acceleration in the pulse and vomiting. ℞. Camph., Carb. Ammonia, āā, gr. v., to be given every hour, with brandy every half hour. Died at five o'clock. Post-mortem examination will be given in place.

Aug. 12. Matilda Jackson, æt. 19, had been lying out of doors for thirty-six hours; when brought in, was in a state of collapse; pulse small; tongue cold; vomiting and purging similar to rice-water. ℞. Saline Mixture; ℞. Subm. Hydr., Camph. Carb. Ammonia, āā, gr. v., to be taken every hour; brandy and water every half hour; sinapisms to the epigastrium and legs; pulseless from five o'clock in the evening. 13th. Pulseless; powders continued every three hours; about two o'clock, afternoon, excitement began to take place; tongue warm; stomach somewhat affected; nine o'clock, pulse better; surface warm. 14th. Powders continued every three hours; brandy every quarter hour; effervescing mixture to allay the irritability of the stomach; evening not so well; bowels not opened. ℞. Ol. Ricini, Ol. Terebinth, ana ʒij., every hour; mixture continued; brandy and water as usual.

15th. Appeared better. ℞. Ol Ricini, Ol. Terebinth, āā ʒij., continued; towards seven o'clock became delirious, and died quarter past nine o'clock. The dissection will be given in place.

Aug. 12th. Samuel Branson, æt. forty; sickness at stomach; bowels affected some days; discharges watery; had been eating water-melon the day he was taken. ℞. Calomel and aloes; sinapisms to the epigastrium; bowels acted on several times; fæces extremely offensive. Saline mixture and ℞. Calom., gr. ij.; Jalap, gr. ij.; Nit. Pot. gr. v., one to be given every hour. 14th. Rather better; stools less offensive. Cal. and aloes in the evening. 15th. Better; ℞. Cal., gr. x. 16th. Bowels well opened; mouth very sore. From this time he convalesced, and was discharged well in a few days.

Aug. 14th. Richard Lee, eat cucumbers last night; purging

and cramps this morning; rice-water discharges; tongue furred. Sinapisms to the epigastrium, and an emetic, before coming in. ℞. Subm. Hydr. gr. x., every hour till the bowels be opened; saturated solution of Mur. Sodæ; saline mixture. 15th. Rested well last night; repeat Submur. Hydr.; bowels opened; stools bilious. 16th. Convalescent; bowels opened. 18th. Relapsed this morning; tongue and surface throughout cold; clammy sweat; pulse very feeble; had been eating some bread yesterday, to which was ascribed the relapse; died on the morning of the 19th. Dissection will be given in place.

Owing to the hurry and confusion attendant on an appalling disease, while filling an hospital with patients, and a number of physicians, from a distance, calling daily for the purpose of obtaining information of the disease, and there being but one house physician, the foregoing report of cases is less satisfactory than we could wish; nevertheless, we feel fully satisfied that the result of the treatment employed is, under equal circumstances as to the vicious kind of patients we had to deal with, as favorable as could be expected; this, indeed, was much aggravated by our having a cholera dispensary in operation, which kept away the better patients: all those that may be termed the decent poor, were provided for in their own houses, and in this last accommodation the success was more satisfactory.

ANOMALIES, WITH REMARKS ON SOME OF THE CASES WHICH WERE UNDER TREATMENT IN THE CHOLERA HOSPITALS IN 1832 IN BALTIMORE.

Such had been the unsettled state of things, as regards the nature of epidemic cholera and its treatment, when the disease appeared in Baltimore, that a good deal of variety occurred in the choice of remedial agents; but after the trial of such as seemed to have acquired some comparative celebrity, we settled down to a pretty regular method of treatment, which, we still believe, was well suited to the disease as it was then characterized.

Among the pathognomonic symptoms, rice-water discharges were most common, either at the time of admission, or had preceded, to more or less extent, cold tongue and surface, indifference to danger, paucity of urine; but sixteen cases were noted presenting bilious discharges, out of one hundred and seventeen that were reported from Hospital No. 2. Then, we may note that seven cases were attended with constipation at the time of admission; these required active cathartic medicines, such as calomel and aloes, scammony once, senna and salts frequently, croton oil three times, tobacco injection once, for opening bowels and for spasms of the stomach. Dark stools are noted three times. One case was attended with ileus, and was fatal.

Temporal artery opened once; pint of blood drawn; case fatal. The stools are noted as being yellow five times; bilious vomiting four times; saline emetic four times; slimy passages twice, once red; tongue red six times; coma twice; mania-a-potu once; two cases of parturition—one died, one recovered; tongue dark, typhous-like, once. Seven cases had symptoms of dysentery. Chills were uncommon; but we had seven cases noted; tongue purple twice. Cough noted once. Urticaria of face, breast, and arms, once, and fatal. Vertigo once, and recovered. Convulsions twice, fatal; inflammation of the eye, one. Husky voice noticed three times. Stools noted as being once very offensive.

The following medicinal articles were tried: Turpentine and castor oil four times; laudanum and kino twice; lead and opium once; venesection sixteen times, some before coming in; tinct. cantharides used eight times. Cups were applied once to the epigastrium, but no blood could be obtained. Turpentine injection once; quinia seven times; sublimate, in ointment to the epigastrium, once; this article will blister in less than an hour; case fatal. We had five relapses after complete convalescence. Actual cautery to spine once, of no avail. Epispas. to epigastrium once. One patient had spasms of the occipito-frontalis muscle. Two subjects had spasms of the thighs and other parts after death; one case for more than one hour.

Dr. Carrere has remarked that the pulse was sometimes full

and tense, and, in such cases, free bleeding was found very useful, and, when resorted to, the blood was allowed to flow till spasms ceased and the blood appeared redder. He says the mercurial sore mouth was generally followed by recovery. It may suffice, on this part of our subject, to say, that our practice settled down to the use of calomel and nitrate pot. as a standard remedy, and the alkaline solution (of carb. sodæ, tinct. opii, and ol. sassafr.); and in the early stage of spasmodic symptoms, or free alvine discharges, the free use of opium, calomel, and castor oil, were valuable remedies. We must not overlook Dr. Carrere's remark respecting the use of melted lard for the purpose of restoring warmth to the skin, and checking clammy cold perspiration, upon which little impression could be made by dry heat, owing in part to the great restlessness of patients; and he says, "Tonics and diffusible stimulants were tried, but were not found useful, and have been laid aside upwards of a month." The same remark applies with equal force to Hospital No. 1, under the care of Dr. George Mackenzie. We shall hereafter refer to some of Dr. Mackenzie's cases.

HOSPITAL NO. 3, IN 1832, IN BALTIMORE.

The Mayor and Board of Health thought proper to open a third hospital for cholera patients in the epidemic of 1832. Dr. Augustus L. Warner was appointed to the care of this establishment. The Doctor having, long since, paid the debt of nature, we are disposed to notice the remarkable discrepancies between his reports and those of No. 1 and No. 2 with all possible respect and forbearance; but the medical profession of Baltimore being aware of Dr. Warner's engagement at one of our cholera hospitals, it will be expected that we notice his reports in this work, with those of No. 1 and No. 2. Besides, we have given publicity to the reports for Hospital No. 3 in one of the volumes of a medical journal which we were publishing at the time the cholera epidemic prevailed in Baltimore, and it might appear strange that we should not notice the re-

ports of No. 3, the more so from the several remarkable discrepancies which we have already named, and which we now proceed to examine.

"The progress of cholerica epidemica may be divided into different stages or conditions—the premonitory diarrhœa, the rice-water evacuations from the stomach and bowels; the cold, blue, collapsed, or asphyxiate states; the typhoid fever." Our experience leads us to remark, that while epidemic cholera is strongly characterized by a few unmistakable pathognomonic symptoms, it may truly be said to be a protean disease, whether we look at its coming and going, its mode of invasion of the human system, the result of remediate agents, &c. And such is the extent of these irregularities, that all attempts at classification of its symptoms are altogether futile; of this we shall have occasion to say more, under the head of specialities. Agreeably to Dr. Warner's attempted "stages or conditions," he has reported many cases as being admitted into the hospital "verging into collapse"—"first stage of the disease"—"second stage of the cholera"—"fourth stage, or typhoid fever"—"diarrhœa;" frequently "first stage of collapse." It is remarkable that our author has reported a considerable number of cases as being in such or such a stage, and founded his treatment on that ground, and yet has not noted one case as being in the "third stage." These stages being in good degree gratuitous or undefinable, we cannot determine the amount of danger attached to his cases. He reports fifteen out of ninety-six as his fatal cases.

"Having honestly and faithfully tested the various modes of treatment recommended in this disease, I have no hesitation in stating the following as the result of my experience, after frequent repetition. The indiscriminate use of the lancet is highly injurious, and in a vast majority of cases injudicious or unnecessary. The preparations of camphor I am disposed to consider inert and inutile. Calomel and opium decidedly prejudicial. The tincture guaiac. was freely used, and in no instance with benefit, while the most melancholy consequences attended its administration." One might wonder where the Doctor could have acquired his experience in respect to an in-

discriminate use of the lancet. Verily, verily, a physician who could employ bloodletting to the extent here noted, would, indeed, require schooling; but by reference to the reports of our hospitals, No. 1 and No. 2, which we shall elsewhere notice, and, also, in our specialities, we shall see that bleeding, well-timed and well-suited, is a remedy of much importance.

We are told that "camphor is inert or inutile." Camphor is not to be relied on as a main remedy in any stage of cholera, but it may be used, when on hand, as a carminative for painful flatulency, or sickness at stomach, but probably is no better than peppermint, mint-tea, ginger, or pepper-teas, &c. "Calomel and opium decidedly prejudicial." Here we must express some surprise. It will be seen by reference to the treatment of cholera in Hospitals No. 1 and No. 2, that these remedies were relied on as principal remedial articles, and with a success which brought the decided approbation of the Board of Health, and many of the most respectable physicians of the city. In the present disease, it was almost as necessary to know what was inert or hurtful, as what was more successful, seeing that the disease was new, whether we speak of its mere existence, or of the great diversity of remedies which had been and still were in use.

The author before us makes a "typhoid stage, or fourth stage of the epidemic cholera." We apprehend that if there is any just ground for such a stage, that it will obtain principally with patients who are treated on too stimulant a plan. We have seen a good deal of cholera, and can truly aver that we have not seen five cases showing the character of typhoid fever. In the earlier stages of the disease, it will yield to suitable treatment; and, if advanced to the condition of collapse, the patients nearly all die under any treatment that has yet been employed; but we have no doubt, from what we have seen in other diseases, that by too much stimulation, a sort of pseudo-typhoid condition will occur, where the energies of the patient carried him through the collapse; but even in such circumstances we shall have rather a sequela of the disease, than a real stage of typhoid cholerica proper.

"It has been said that the third or collapsed state is wholly

incurable—that the physician must stand by, an inactive spectator of the ravages of the disease; but I have strong reason to presume that experience and observation have shown, that by the well-directed efforts of the physician, the unrelenting tyrant may be hurled from his throne, and his victim snatched from an untimely and impending fate. The following treatment has not as yet failed in one case in which it was adopted: ℞. Tinct. Assafœt. ʒiij., followed in ʒj. doses every half hour, accompanied by the hourly exhibition of the following powder: ℞. Pulv. Rhei, gr. x.; Nit. Pot. gr. v.; Pulv. Scillæ, gr. ss.; Sulph. Quinia, gr. ij., assisted by the liberal use of warm toddy and chicken-water. Should the stomach be irritable, and reject the above medicine, administer P. Ipecacuan. ʒj., followed by free draughts of warm water. After the emetic has operated freely, renew the medicine [we suppose not the ipecacuan]. ℞. Empl. Vesicat. to the abdomen."

We write not to find fault, but hoping to benefit mankind; and what shall we say here of a discovery so momentous as a means of curing cholera in the "third or collapsed stage." It was our duty to visit, officially, all the hospitals every day; this we did faithfully at No. 1 and No. 2, during the epidemic, but at No. 3 we called occasionally only, because, although its house physician treated us with marked respect, he always manifested a reluctance to speak of his mode of treatment; nor did we there hear anything of the discovery of the great value of the fetid tincture. Need we desire the reader to compare the declaration of a sovereign cure for the "third state" with the result of all other modes, plans, or devisements in all other hospitals, and in all places? We do not recollect that we have seen the use of the fetid tincture as a chief remedy, which it seems to have been here. We give the employment of it to the reader for what it is worth, not having tested it in our practice. We had charge of all the cholera hospitals in 1832, as principal physician, and had we been apprised of such invaluable therapeutic properties of assafœtida, it would have been as much our duty to adopt it as it was the duty of the incumbent of No. 3 to communicate his good fortune to the chief physician of the cholera hospitals.

"The great liability to mercurial impression at this time is a matter of common observation, and the slightest reflection would suggest the ill effects of mercurial ptyalism upon the nervous system, already excited and irritated to its highest point. Independent of this, the depressing effects of large doses of calomel have oftentimes rendered hopeless the condition of him whose constitution and mode of life proffered a strong assurance of speedy relief." We might ask here, where did our author get his knowledge of these baneful effects of calomel? not at No. 1 and No. 2; and we do not see, in his reports, that calomel had been much used in Hospital No. 3.

Let us here turn for a moment to Dr. Carrere's letter to the Board of Health of Savannah. He says: "In the collapsed stage, we have the rice-water discharges very profuse, pulse feeble, and, in some cases, hardly perceptible, in others absent; spasms of the stomach, arms, and legs; tongue cool, or cold as ice; oppression at the præcordia; extremities cold, and bathed in cold, clammy sweat; great thirst, and sense of heat, when the whole surface is to the touch as cold as ice—they are constantly asking for cold water, even until a few minutes before death. When it has been given to them, it has invariably produced great restlessness." "In such cases we commenced, for the first dose, with calomel and opium; then the calomel and nitre were continued, as in the first stage; where *ptyalism has taken place, I have generally found the patients to recover.*" Calomel was given by Dr. Carrere through the epidemic, in doses from two to ten grains, in all stages of the disease, and we shall presently show that Dr. Mackenzie used it rather more freely than his co-laborer in the hospitals, and the result of their labors was not behind that of any institution in this or any other country, as far as we know.

Dr. Warner complains that many of his patients were treated by other physicians before coming in, and alleges this as one of the causes of mortality. So far as this may argue a delay or advance of the case, the position he takes is legitimate; but viewing this matter *in extenso*, we must admit, that the success is pretty much the same, under the treatment of all regular physicians. Be this as it may, the same state of

things obtained at No. 1 and No. 2. We have already intimated, that we were instrumental in getting up a cholera dispensary in the cholera of 1832; this provided for all who had anything like a decent or comfortable home; then, besides the twelve *public physicians*, the physicians generally, as is usual with the profession in times of panic or severe epidemics, were, with the appointees, found foremost in works of humanity, and were constantly administering to the sick poor, and their good works were facilitated and extended by the city having provided apothecary shops, where every physician could have his prescriptions supplied to those who required such helps; hence it was, that almost none but those who were homeless or comfortless at home as to particularly require removal to an hospital, came in. Setting apart the vicious individuals, this tended strongly to bring cases which, despite of all skill and care, would greatly increase the proportional mortality.

It has been asserted by Dr. Warner, that it has been said, in the third or collapsed stage, "the physician must stand by, an inactive spectator of the ravages of disease." We have not had the opportunity of seeing, or even hearing of such a procedure; but, on the contrary, we have seen, in all times and places where cholera existed, such a diversity of medicamenta for the cure of the malady, as has never occurred in any other disease;—such a ransacking of the Materia Medica, allopathic and homœopathic, was never seen before; then the paraphernalia of the kitchen,—salt, pepper, ginger, fire, ice, &c.,—come in for a share of the curative means for cholera, without special regard to different stages; and it is to be feared that this widely-extended array of medicamenta was less harmless sometimes than "the stand by of an inactive spectator."

CHOLERA TREATED ON AN ANTIPHLOGISTIC PLAN.

Thursday, Sept. 20th. James Flemming, æt. twenty-nine, admitted at half-past two, P. M. Intemperate; arrived from Philadelphia yesterday; has had diarrhœa for ten days; taken with vomiting and purging (rice-water); severe cramps; great thirst; tongue brown; surface warm; pulse full; passes urine.

Treatment.—Venesect., calomel and opium; calomel and nitre, saline mixture; frictions with lard; calomel and aloes, infusion of senna, sinapisms. Recovered.

Saturday, 22d. Edward Weaver, æt. thirteen; has been eating nothing but fruit, and lying out in the open air for three or four days past; collapsed; died eight hours after admission.

John M'Cready, æt. fifty. A few days from Philadelphia: has had diarrhœa for several days; was on a frolic last night; when admitted he had frequent watery evacuations; tongue white; pain in the stomach; surface warm; pulse full; passes urine. Treatment.—Venesect., calomel and opium, cal. and nitre, saline mixture, ol. ricini. Recovered.

Sept. 23d. Henry Drofter, æt. thirty-two. Intemperate; was taken last evening with vomiting and purging; when admitted he had no vomiting, but frequent light-brown evacuations, mixed with a very bright-yellow fluid; severe cramps; great thirst; tongue white; pulse full; surface covered with sweat; passes urine freely. Treatment. — Venesect., calomel and opium, frictions with melted lard, calomel and nitre, saline mixture, ol. ricini, sinapisms. Recovered.

Sept. 24th. Francis M'Coy, æt. nineteen; sickened this morning; has had diarrhœa for two days; lay for some time yesterday on the damp ground; was taken at two o'clock this morning; was seen by Dr. Yates, who gave him some medicine; has now no vomiting, but frequent watery evacuations; pain in the stomach; pulse feeble; tongue white; surface cold and covered with sweat; passed no urine since yesterday. Treatment.—Calomel and opium, cal. and nitre, saline mixture, frictions with melted lard, ol. ricini, sinapisms. Recovered.

Sept. 24th. Gregory, æt. thirty-six; sickened this morning; has been bled; when admitted, frequent purging; pain in the stomach; tongue white; pulse soft; surface warm. Treatment.—Calomel and opium, cal. and nitre, saline mixture, calomel and aloes, sinapisms. Recovered.

Sept. 24th. Hester Dorsey, æt. thirty-eight; has had diarrhœa several days; was taken yesterday morning with vomiting and purging; severe cramps; has been taking Thomsonian medicine; collapsed. Result omitted,—suppose she died.

Sept. 25th. Ann Thomas, æt. forty-five; taken with vomiting and purging; has had no medicine; when admitted, no vomiting, but frequent purging; severe cramps; tongue brown; full pulse; surface warm; passes urine. Treatment.—Venesect., calomel and opium, cal. and nitre, saline mixture, frictions with lard. Recovered.

Sept. 25th. Priscilla Jones, æt. forty-seven. Has been sick for some time; has been eating fruit; taken two or three days since with vomiting and purging; when admitted, no vomiting, but frequent watery passages; severe cramps; tongue brown; pulse very feeble; surface cold and covered with sweat; pain in the stomach; has passed no urine for two days. Treatment. —Calomel and opium, cal. and nitre, frictions with melted lard, saline mixture, sinapisms, &c. Died.

Sept. 25th. James Dyer, æt. thirty-six. Has been sick several weeks; taken day before yesterday with vomiting and purging; ate apples; vomiting and purging when admitted (rice-water); cramps of the legs and arms; tongue brown; surface cold; pulse very feeble; passes no urine. Treatment.—Calomel and opium, cal. and nitre, frictions with melted lard, blisters, &c. Died. Three cases are next reported who came in in a state of collapse, and died under the same treatment above noticed, and there seems to be no occasion for reporting them in detail. Wm. Reed was admitted, 29th Sept.; was taken yesterday with purging and vomiting, which still continued, with severe cramps of arms, legs, &c.; tongue white; pulse feeble; surface warm; passed no urine since yesterday evening. Treatment.—Calomel and opium, cal. and nitre, frictions with melted lard, sinapisms, blisters. Recovered.

Sept. 30th. Nathan Heird, æt. thirty-seven; has had diarrhœa for several days; when admitted was vomiting and purging (rice-water); tongue white; pulse very feeble; severe cramps; great thirst; surface cold, covered with clammy sweat; passed no urine since yesterday. Treatment.—Venesect., calomel and opium, cal. and nitre, saline mixture, ol. ricini, calomel and aloes, sinapisms, blisters, &c. Recovered.

The next case, in the reports before us, was Charles Dorsey, a negro. He had been ill for several days, and without medi-

cal treatment; none was instituted, and he died half an hour after admission.

October 6th. Charles Sterritwill was admitted, æt. thirty-nine. Intemperate; was eating fruit yesterday, and overtaken with diarrhœa; when he came in he had frequent light watery evacuations; severe pains in the stomach; tongue white; pulse full; surface warm; passes urine freely. Treatment.—Venesect., calomel and opium, cal. and nitre, saline mixture, ol. ricini, sinapisms. Recovered.

Wm. Graham, æt. twenty-seven, was admitted after having been frolicking several days; had diarrhœa yesterday and severe pain in the stomach; now purging light fluid matter; pain in the stomach still; tongue furred: pulse full; surface warm; passes urine. Treatment.— Calomel and opium, venesect., saline mixture, sinapisms. Recovered.

Oct. 13th. Polly, a negress, æt. thirty-seven; has been complaining for two or three weeks; was taken yesterday with vomiting and purging; cramps; collapsed; died one hour after admission. No treatment is noted, and we suppose none was instituted. 13th October. Lawrence Cholhous, æt. forty-seven; has been sick for two weeks; collapsed; died in six hours; nothing said of treatment. Oct. 14th. Elizabeth Carsvell. Has diarrhœa, supposed from eating cabbage; was seized with severe cramps this morning, and has frequent watery evacuations, with severe pain of the stomach; tongue white; pulse full; surface warm; passes urine. Treatment.—Venesect., saline mixture, cal. and nitre, ol. ricini, sinapisms. Recovered. Oct. 17th. Ann Goff, æt. thirty-seven. Has been sick for a considerable time; very intemperate; when admitted no vomiting, but frequent light watery evacuations; cramps of the legs; severe pain in the stomach; tongue brown; pulse very feeble; surface covered with sweat; has passed no urine for three days. Treatment.—Calomel and opium, frictions with melted lard, injections, saline mixture, sinapisms. Recovered.

It seems proper that we give a brief explanation of this systematic plan of treatment which was pursued by Dr. Mackenzie. We observe that, in the latter part of his practice, he bled wherever the pulse was full, and the surface warm; but, in a

few cases, the opposite state of the pulse and skin did not deter him from the use of the lancet, and sometimes with success. He usually took from sixteen to eighteen ounces; but he, like Dr. Carrere, adopted, as a rule, when he bled, to let the blood flow till there was sensible mitigation of pain, or a brighter color in the blood.

Calomel and opium in combination, as a first remedy, was given in doses, from the first, from two to ten grains, and from one to three grains of opium; where the smaller doses were given, they were repeated at short intervals of one, two, or three hours. Where a full dose of both was given, it was succeeded in an hour or two by calomel, in from two to ten grain doses; nitr. pot., five grains; and repeated every two or three hours. Where the bowels became torpid, or there was harassing small passages, five or ten grains of aloes were added to the calomel. In protracted cases, or where there was no manifest benefit from sinapisms, blisters of cantharides were used. The saline mixture was a mild adjuvant in all cases, and appeared, in almost every case, to afford some mitigation,—this was R. Carb. Sodæ, ʒj.; Ol. Sassafr., gtt. v.; Tinct. Opii, gtt. l. vel lxx.; Aqua, ℥vj.; table-spoonful every half or whole hour, or two hours, according to the urgency of the vomiting, or pain, or sickness of the stomach.

SPECIALITIES IN THE EPIDEMIC, 1832.

In giving a brief abstract of the cases treated by Dr. Carrere at the Hospital No. 2, we wish here to notice some interesting circumstances connected with the first case of a really malignant character. "The patient," says Dr. Carrere, "was *in articulo mortis* when brought in; saline injections were used, after which the temporal artery was opened, and about a pint of blood obtained." About the time of the admission of this case, or a little anterior, experiments were made upon cholera patients by injecting their veins with a solution of common salt in water. Such experiments had been made at New York and Norfolk. Prior to this, we had been led to speculate on

this subject from reading the dissections of Dr. Diffenbauch at Berlin. By those dissections it was found that there was a strong tendency to coagulation of the blood in cholera. Subsequent observation has convinced us that, although a frequent occurrence in our cholera cases, it does not obtain to the same extent that it did at Berlin in 1831.

The blood having been seen so constantly dark, and coagulation prevailing so much, or a tendency to solidification of the blood, led us to imagine that any agent which would have the effect of preventing coagulation, and, at the same time, restore the proper fluidity and floridness, would be a useful remedy in cholera. In reflecting upon this subject, we were reminded of what we had seen, when a boy, at the butchers' shambles, where we have seen them prepare the blood of hogs for what has been called blood-puddings. This is done by catching the blood, as it flows from the arteries, into a vessel, into which there is first put a small quantity of common salt, and then beating the blood briskly with a small stick, while it flows into the pan; by this process the blood remains fluid and florid. In this procedure we see, then, that the salt has the effect of keeping up the natural color of blood. Every one, we suppose, is aware that by beating the warm blood of healthy animals, by means of a small rod, that the fibrine will collect into shreds, and become attached to the rod. We had hopes that we could, by the use of salt, prevent, in some degree, the tendency to coagulation of the blood, and thus prevent the separation of its ingredients,—we mean by salting the blood.

We wish now to give the particulars of a case in which injection of the veins was applied. Dr. Carrere says: "the patient was extremely ill; extremities cold; voice husky; skin on the hands shrivelled; extreme prostration; pulse scarcely perceptible; sensible when spoken to, but was extremely dull, and seemed to suffer the agonies of malignant fever." Upon examining his arm, the cephalic vein could not easily be found, particularly in the colored skin, owing to the great diminution of the size of the vein. It was discovered, and laid bare a reasonable distance, and was now found not to exceed in size that of small twine. There was some little difficulty in making the

necessary puncture, with a sharp lancet, for the injection-pipe; this was done by elevating the denuded vein on the end of a probe. Two drachms of common salt were dissolved in fourteen ounces of water; this was injected slowly into the vein at the temperature of about 98°, the standard of Hunter. In a few minutes the patient became more animated, his pulse improved considerably, and the surface became in a slight degree warmer; in short, we were much pleased with the effects of the remedy. But it was soon seen that the improvement was not progressive, and we observed that the contracted state of the superficial veins continued. Believing that the blood was not only darker than natural, and disposed to coagulate in the vessels, but that the quantity was much diminished, we resolved upon filling the veins with simple water, not deeming it proper to introduce so much saline matter into the circulation. An effort was made to inject water; but it was soon found that it would not enter into the vessels, owing, as we suppose, to want of affinity between the water and the living blood. Not succeeding in this, we resolved upon injecting another portion of the saline injection into the foot; accordingly, a vein was opened on the upper side of the foot, and about fourteen ounces of salt water injected. This was attended with a little further amendment, and the circulation being now somewhat improved, a vein was opened in the arm, and a little blood obtained. A branch of the temporal artery was now opened, which bled freely, and the blood was florid. We now believe the bleeding was improper; but no doubt the case was too far advanced to admit of any hope of restoration. It will be recollected, however, that by many of those who had treated cholera in Europe, as well as in this country, bloodletting was much insisted on; but the precise circumstances under which it could be beneficially applied was still matter of great uncertainty. It has been remarked by Dr. Carrere that this patient died in a few hours, without having furnished anything decisive as to the advantages or disadvantages of bleeding, or the salt injection.

Dr. Carrere reported a second case of injection of the veins. "In the afternoon, the injection of Nitr. Pot. ʒj., in ℔j. of warm water, was introduced into the vein of the arm, and it produced

a slight reaction; pulse perceptible at the wrist for awhile; pulsation of the heart about one hundred and thirty in the minute; the patient complained, during the operation, of great pain in the shoulder and back; the pain of the back he complained of during the whole day; he wished very much to have some wine, a small quantity was given him, which sat pretty well on the stomach; he stated that, a short time after the operation was commenced, he felt great heat about the heart; appeared as if he was going to faint, but rallied immediately, and stated that he thought there was a Spaniard who struck him with a knife in the heart. The first evening he was in the house he made the same remark." This patient, after having rallied wonderfully, died several hours after the injection, so that we have no doubt he lived longer than he would otherwise have done; but, as the case was attended with some interesting circumstances, and the hospital physician, owing to a great pressure of business, could not be as minute in his remarks as seemed desirable, we have thought proper to notice a few additional facts connected with the case, and which we published in our medical journal for 1832.

The injection of salt having failed generally, we resolved upon trying some other agent which resembled it in its properties, and which we believed to have the property of restoring the fluidity and floridness of the blood. For this purpose we dissolved ʒj. of Nitrat. Pot. in ℔j. of warm water. The cephalic vein being prepared, the pipe of the injecting apparatus was introduced; but we soon found that the blood would not easily receive the fluid. Being foiled in our effort at injecting the nitrous solution by the force obtained by the height of the column of water, we bethought ourselves of pressing the fluid through the small tube by stroking down with the thumb and forefinger; in this way we could apply considerable force, and we soon succeeded in passing about an ounce of the fluid into the vein; as it passed in, the patient cried out with an agony of pain; he continued to cry out at each injection. Upon questioning him as to his feelings, he said he had a rending pain in his shoulder. He soon complained of its passing inwards towards the heart, when, all at once, he started up as if

suddenly alarmed. His face became slightly flushed; the surface, which had been extremely cold all day, became warmer; his pulse stronger; his expression more animated; and he expressed himself as stated above.

He now proceeded clearly, and with considerable energy of expression, to inform us, that he had suffered all day from cold feet, whereas he now was warm, and felt a pleasant glow over his whole body, and that we had infused new animation into his system, for which he wished to give us a thousand thanks. This was evidently a man who had seen better days, and was of more than ordinary mental endowment. The propriety and energy with which he was enabled to express himself, after lying all day exhausted below the power of articulation above a whisper, was highly gratifying, as well from the impression made by so sudden a change so unexpected, as by the momentary hope that the remedy might possibly be attended with success. We left the patient with a feeling, that if his disease had been any other than cholera, we should have looked most confidently for a restoration. The disease had too far impaired his system, and a few hours of seeming respite terminated in a return of collapse, and death closed the scene.

Our experience, so far, in respect to the injection of the veins for the cure of cholera, leaves us little or nothing to expect from this practice, unless we can devise some other mode of employing it. Should it be thought advisable to make further trials of this mode of treatment, there appears to be two points to which our attention should be directed: 1st. To find the proper material for the injection. 2d. To decide to what extent as to quantity we should carry the injection, and as to the repetitions which may be requisite or allowable.

We shall not speculate upon this subject, since we have no positive information to offer. It would seem reasonable, however, to look to some fresh animal matter, dissolved in water; suppose we say a very small quantity of the fresh brain of some slaughtered animal, with or without a very minute quantity of nitrate of potass. Should we live to have opportunity, we may yet attempt to investigate this affair still further. As to quantity, the empty state of the bloodvessels would seem to indicate

a large quantity of fluid; but we must remember that the heart and arteries can only accommodate themselves to small and gradual changes of the quantity of the blood. The necessity which exists for a due distension of the vessels is well known, and we may readily believe that over-distension would prove hurtful, and, when urged too rapidly or too forcibly, might prove fatal: dissection shows a diminished calibre of the veins.

This view of the subject would seem to lead us to the conclusion that there would be most hope from repetition,—a moderate quantity being injected, we may note the effect; if the patient appears to be benefited, this would seem to indicate that we have injected enough for the time; it would seem to be proper now to use the most scrupulous care, and repeat the moment that we find our patient falling off.

But, while we express as our opinion that the injection of the veins has not been sufficiently tested, we wish to express our apprehension that we can only hope to combat the fault in the system, so far as the blood is concerned. If the secerning vessels, and the nervous influence governing these secerning organs, are in a state of derangement, our efforts to relieve will be transient. But, as there is a mutual dependence between the blood and the powers and organs alluded to, it may be that improving the condition of the blood may improve other associated parts. Besides, the secernents may be improved, and yet so much diseased as to be unable to recover under the opposing influence of the blood now somewhat improved, the blood being still deficient in quantity and defective in quality. We must not forget, in our reflections on this subject, to bear in mind, that the injection of the veins has never been employed, we believe, except in the stage of collapse; and every one is aware of the slender hopes, in this stage of the disease, under any treatment. We would not wish to be understood that we recommend this remedy at an earlier stage of the disease, for the present. The remedy, so far, has not been attended with results at all favorable to our hopes in using it; and so many patients are affected with cholera, in which there does not seem to be any tendency to collapse, that to use a doubtful, or any other than what may, reasonably, be consi-

dered safe, is not justifiable; still, there are desperate cases in which we may experiment with propriety.

Having disposed of our own experience, which is quite limited in respect to injection, we now turn to the apparatus by which we accomplished our injections into the veins, which was, perhaps, as simple as anything that could be made use of. It consists of a cylinder of tin, which would hold a little more than a pint, and terminated in a funnel, the pipe of which was made so small as to allow of a small silver tube to be introduced, and the point of this second tube small enough to enter the punctured vein, this point having a small knob, so that its otherwise sharp point might not perforate the coats of the vein; to the larger end of this injecting tube there was tied about three feet of cat's intestine, dried for that purpose. We found, on trial, that considerable pressure could be applied by pressing the fluid towards the vein by the thumb and forefinger. The tube being transparent, we easily avoid the injection of air. We are reminded here of an observation of Dr. Diffenbauch, i. e., that the blood of healthy persons will not unite readily with that of cholera patients; and hence the difficulty, and indeed, impossibility, of accomplishing transfusion with success. We have seen that the same difficulty attended our efforts to introduce warm water into the veins of cholera patients. So far as the blood is concerned, we are inclined to believe that the saline injection, in good degree, corrects the fault in the blood; but it is not sufficient that we merely improve the mass of blood present in the veins, but we must change the morbid action of the capillaries, and the nervous energies also must be corrected, and hence, probably, we may derive the true explanation, that the improvement of the patient, in all cases, has been temporary.

DR. REES ON TRANSFUSION.

In the Medical News, published by Blanchard & Lea, we have some observations upon transfusion, by Dr. William

Marcet. We have first the formula recommended by Dr. Owen Rees: "℞. Chloride of Sodium, ℥iij.; Phosphate of Soda, ℥j.; Carbonate of Soda, ℥iss.; Sulphate of Soda, ℥ss. This combination is to be dissolved in a little water, and the solution to be gradually diluted with small proportions of distilled water, at the temperature of from 58° to 63° Fahr., occasionally testing it with a urinometer, until it has attained the specific gravity of 10·30; the whole fluid is then to be heated to 98° Fahr., when it will be ready for use.

"Dr. Owen Rees considers that the specific gravity of his solution ought to be the same as that of the serum of blood, and assumes it, therefore, to be as high as 10·30. I may, perhaps, however, be allowed to observe, that serum, containing 80 parts albumen, besides 8 or 10 parts of salts, dissolved in 1000 parts of water, must have a much higher specific gravity than if it consisted only of a solution of 8 or 10 parts of inorganic salts in 1000 parts of water; and consequently, that the specific gravity assumed for the above solution far exceeds what it ought to be, if the gravity is raised by saline matter only. This assertion, moreover, is proved by experiment, as I have ascertained that the specific gravity of a liquid containing 1000 parts of distilled water, and 10 of inorganic salts, such as occur in the blood, according to the proportions given by Nass, in his analysis of the fluid, which does not exceed 1·004 at the temperature of 68° Fahr.

"Perhaps, therefore, I may recommend the following formula: Water, ℥x.; Chloride of Sodium, xxxj. grains; Phosphate of Soda, v. grs.; Carbonate of Soda, vj. grs.; Sulph. Soda, j. gr., which is to be heated to 98° Fahr., when required for use. The specific gravity of the above solution is 1·004 at 68°, and between 1·000 and 1·001 at 98°; its composition is as nearly as possible identical with that of the serum of the blood, deprived of its organic principles. The following are the calculations from which this formula has been obtained. According to Nass, 1000 parts of blood contain 7·999 of salts.

Soluble Salts in the Blood.		Insoluble Salts.	
Alkaline phosphates, .	0·823	Lime, ...	0·183
Sulph. soda, ...	0·202	Phosphoric acid, . .	0·201

Soluble Salts in the Blood.		Insoluble Salts.	
Carb. soda,	0·956	Sulph. acid,	0·052
Chlor. sodium,	4·690	Magnesia,	0·015
		Silica,	0·043
		Oxide of iron,	0·834

"The number 6·671 for the salts is, however, under the average, if we consider other analyses of blood made by trustworthy chemists. We may assume it to be at the highest about 10. According to the proportions given in the analysis of Nass, 10 parts of the soluble salts of the blood dissolved in 1000 parts of water, will consist of

Alkaline phosphate,	1·233
Sulph. soda,	0·302
Carb. soda,	1·433
Chloride of Sodium,	7·030

"Ten ounces of the solution will contain, therefore, a little more than the hundredth of an ounce of phosphate of soda, and if a fluid ounce of distilled water weighs 437·29, or about 5 grs., the proportion of the other salts have been calculated by the same process."

Chemists who have been laudably engaged in experiments and analyses of the blood, deserve great praise; but while we would applaud, and hope their labors may eventually succeed, we wish to express our apprehensions, that their views and proposals are too chemical. We find, in cholera, that some hurtful cause has disturbed the normal relations of the several integrant parts. It has been said correctly, we think, by the American father of physic, Dr. Rush, that "disease is ever a war with nature." The disorder within may be viewed as a sort of warfare—changes take place, and parts and parcels separate from their normal posts, and the grand sustainers of life are decomposed, and a part of their integrant substance rejected, driven out; and sluices are opened, and fluids absolutely essential to life are sent forth, so to speak, forwards and backwards through unwonted channels.

We have seen the inward tumult, and would replace what has gone forth from its usual share in the sustentation. Such the dilemma, the chemist would replace the thing (the serum

of the blood) that has been rejected. It seems proper that we inquire here into the cause of such rejection of the serum.

Physiology opens to our view one grand system, constructed of several systems of organs, each of which has its peculiar office as an integrant; and each co-ordinate system co-operates in the scheme, making the grand living body. It follows that all these co-ordinates must harmonize in the constitution and sustentation of the living economy. The term *vis a tergo* seems to be obsolete, but whatever term we may adopt for the condition which gives play to the great circulation, there must be harmonious action of all co-ordinates to sustain the circulation. The brain and nerves have their offices—the blood must co-operate with the nervous system, the sanguiferous system, the lymphatic system, nor less important, as an integrant of the grand system, than any of its co-ordinates, is the blood. This physiological sketch will serve to illustrate the pathology of cholera, so far as will answer our present purpose. We shall, therefore, not enter into the depths of the plastic or ultimate ends of the organs which we have noted; this would lead us into a field which we neither need or desire to enter upon.

The abnormal condition which it is our purpose to inquire into at this time, as it stands related to cholera, shows us a deteriorated blood, which is not in harmonious action with the nervous system; and, of course, this is attended with a want of affinity between the terminal nervous fibrils of the inner coat of the vessels and the blood itself.

We use the term *vis a tergo* as a convenient term for expressing a condition or order of things growing out of a normal co-operation of whatever aids in the grand scheme of the circulation; and in this scheme we suppose the terminal nervous fibres of the bloodvessels act an important part. On the nervous fibres we suppose any extraneous matter which we might inject would first act; the impulse thereby given will carry the blood to the lungs; here, again, the nerves of the lungs must co-operate in the oxidation of the blood, and thereby withdraw the carbon. We have seen that, in cholera, as the disease advances, all the physiological relations are broken

up, new impulses are present, new affinities and new lœdentia reign.

If such be the state of things, can we determine, *a priori*, that if we inject water containing the same material that was thrown off in the serum of the blood, that it will exert and receive the same affinities as existed in the mass of blood, when all things were in the normal state. We have seen that "disease is a war with nature," and the very thing that has just been cast off may not be more likely to restore harmony than some agent which will excite new impulses and new affinities in all the co-ordinate structures and powers. What that agent can be, or whether there be any such thing, can only be determined by experiment. One thing is certain, that as the serum diminishes in the blood which remains in the bloodvessels, the carbon must accumulate in undue quantity. Will this not require additional labor on the part of the lungs, and have not the lungs, as one of the grand integrants of the general system, already failed in the office of decarbonization? This suggests the inquiry, can we help the lungs while we attempt to help the blood?

All the living functions are maintained by a vital *appetitus*, by which we mean an elective power. Then, if we introduce into the system what is chemically a real similitude, to a part that, in a general disorder, has been rejected, can we rely upon the procedure for a vital acceptance of material that is non-vital, unless it be functionally accepted?

We are reminded here of the anxiety constantly seen in our patients, and still more in their friends, to cause them to take food, with but little regard to the condition of the stomach. Aware that strength comes from eating, they think only of the supply, not knowing that, in all cases of unsuitable supply, more or less evil will grow out of it; since whatever is not digested will irritate and increase any disorder present in the system. Indeed, we see that, in cholera, even before we are at all aware of anything being amiss, a too free meal or small quantities of articles that are hard of digestion, instead of its calling forth the vital forces, or that *functional appetitus*, by which we exist, we have tumultuous disorder originated by it.

We have seen, that if there be a choleraic atmosphere, and we are admonished by flatulence, a slight diarrhœa, &c., that we are morbidly impressed, the use of some carminative, and a little abstinence, will ward off impending danger. May we not hope that something similar may be possible in otherwise hopeless cholera, and, instead of crowding the vessels with injections having the stimulus of healthy blood, something much milder in its properties may be better suited to the crippled nerves of the heart and bloodvessels, also those of the lungs. We offer these reflections partly with a hope that suitable experiments may still be made, and partly to express our decided belief that it is vain to expect, by returning saline combinations, to replace the waste of decomposed blood. There is no more hope—nay, we think, not so much hope of success as by something milder, and this we offer on the ground that there is no more reason to expect that the *salification* of broken-down blood can be vitalized by saline injections, than there is that food put into the sick stomach can be digested and assimilated into the plastic uses of the system. But if we see mild agents composing incipient cases of cholera, as has so often been done by the use of mere carminatives, there would seem to be ground for hope that we can sanguify the system when half dead, by some mild remedy, rather than by returning what the general internal disorder has expelled, or what is similar to it. The grand system of man is a tissue of appetites—disorder ruling, it is only by experiment and induction that we can attain curative knowledge.

It has been our design, in the foregoing sketch, to awaken attention to affairs that may hereafter lead to greater success in the treatment of cholera by means of injection of the veins. We have understood that the veterinary practitioners in Russia treat their cases by veno-injection, with a view of economizing the expenses attending the purchase of medicine, and we have read, somewhere, in the works of Goldsmith, that sweet milk, injected into the veins of one of our domestic animals, will occasion speedy death. The former fact goes to show that there may not, after all, be any great risk in the cautious use of in-

jections into the human veins. The latter would teach us to be very cautious of things seemingly mild, but which, nevertheless, might be poisonous when injected into the veins; nor can we venture, *a priori*, to decide that compounds nearly similar to the blood will be beneficial, or even safe, until we have tested them in forlorn cases by experiment.

ABATEMENT OF CHOLERA.

Returning to our observations on epidemic cholera at Baltimore in 1832, we have to remark, that as the disease abated in its career, it abated in its virulence, and we think this has been one of the most steady traits of its character, and, no doubt, led physicians to imagine sometimes that they had fallen upon a more successful practice than others. Thus, it sometimes appears that the disease seizes with great virulence, and many die; the physician, seeing no well-marked advantage from remedies, tries several in succession, each of which has some time been supposed to have been useful in the practice of others. Presently he finds one to answer beyond his expectations. Thus unexpectedly relieved from his difficulties, and his mind relieved from the distress inseparable from the devastation which cholera makes at its acme of virulence, he suffers himself to conclude that all the success is owing to the new remedy, or at least in greater part; forgetting that all may be ascribed to an ameliorated condition of the disease itself. In this way, too, it may sometimes happen that hospitals that are opened later in a cholera season will exhibit a more favorable report of cases than those that are opened earlier, although it is known, that with almost no exceptions, cholera, however long it may linger in the stages of cholerine, or cholero-dysentery, in a neighborhood, assumes its acme of virulence soon after making its epidemical lethalic appearance. Malignant cases may turn up throughout a season, but not in a degree to disprove the position we have assumed. The circumstances here presented are well worth noting, since it has often been

the leading *ignus fatuus* that has led physicians, in their philanthropic hopes, to visit cholera districts, believing they had means of cure, only to be greatly disappointed in every such adventure.

THE FIRST CASE OF MALIGNANT CHOLERA WHICH WE SAW IN BALTIMORE IN 1832.—We judge proper to enter more fully into the particulars of this case, than was done by Dr. Mackenzie, who, at that time, was too much occupied in making his general arrangements in the hospital to enter into minute details of cases. We saw this patient about three-quarters of an hour before his death. He was a frail old man, 75 years of age. He had the contracted choleraic face in greater degree than any one we ever have seen, and it could readily be distinguished from the wrinkles of old age. We need not describe the symptoms, but would remark, that the patient retained his senses till within a few moments of his death, and insisted on being bled. We could not indulge the slightest hope of his recovery from any treatment; for, although as yet we had but a slight acquaintance with cholera in its malignant stage, the fatal tendency of the case was too clearly portrayed to leave any difficulty in forming a prognosis of it. Nevertheless, we consented to bleed him, because we felt confident that, under existing circumstances, it could not injure him, and we were anxious to try whether he could be bled, and to ascertain the appearances of the blood. A vein being pretty freely opened, we obtained a mere trifle of blood, which was very dark colored; indeed, it might be said to be black. Not getting as much as would enable us to examine the blood, we opened a vein in the other arm, and, by a good deal of rubbing, we got about two ounces. Finding that no more blood could be obtained, we now turned our attention to other remedies. Dr. Mackenzie states that an enema of salt and water had been given. We gave the patient a large tumblerful of salt water. We had previously resolved upon trying the use of salt water in this way, as well as by injecting the veins. In this case, neither the injection by the rectum, nor the salt water by the mouth, came away; all remained within. The countenance of the patient suddenly changed, his respiration became much more

laborious, his eyes lost their lustre, and he did not answer questions put to him, and, in a few minutes, he quietly expired.

We discovered in this case that but little could be expected from the external application of dry heat, owing to the incessant and ungovernable disposition of the patient to toss about, so that nothing could be regularly applied, even while a nurse stood beside him for the purpose of keeping the bags of warm sand to his extremities. We afterwards learned, early in the irruption of the epidemic, that warmth could not be regularly applied to patients in this disease, and we soon abandoned all attempts at applying heat, except to the feet, which was done by means of sand-bags applied to the soles. Indeed, it does not seem reasonable to us, that while a copious exudation was going through the skin, that any heat could thus be imparted to the body. We therefore resolved upon endeavoring to retain all the heat which might be found in the body, by applying long sleeves, and leggins of thick woollen baize. So soon as a patient would be got to bed, his skin was wiped dry, and the woollen envelopes applied.

But to return to the case of Brown. We bled this patient ourselves. It so happened that a clean strip of white muslin was given to us to be used as a ligature; this was stained with a few drops of blood. About an hour after the bleeding, we observed that the stain on the bandage was unusually bright, and, upon closer examination, we found an appearance of greater consistence in the blood forming the stain; or, as if the coloring fluid had more body than usually exists in blood; and, instead of the edge of the stain terminating in a margin which became paler when it spread, as is usual, it terminated abruptly, without the least appearance of any stain from serum. Looking at the blood in the bottom of a tin pan, it very much resembled a piece of metal which had been japanned black—it was highly polished, and looked as if the surface was covered with a pellicle; and in attempting to touch it with the finger, one had the impression that the surface would give resistance, but when the finger came into contact, gave to the touch the perception of an oily fluid. In short, we decided that, in this case, the blood was decomposed, and deprived in part of its

serum, while the remaining mass was more closely amalgamated, and the color more intense than usual, whether we look to the blood in the pan, or the stain on the muslin. We were led to the conclusion, which we have not found reason to change, that whatever might be the nature of cholera, or whatever might be said of recoveries from collapse, whenever the blood of a patient takes on the condition which we have just described, they are irrecoverably gone, the blood being wholly unfit for the purposes of life; death is now as certain as if a bullet had passed through the heart. It is very certain, however, that this condition of the blood does not always exist when the symptoms of collapse are seemingly present. Our opinion of the matter is this: the danger which attends cholera grows principally out of a tendency to a certain kind of morbid debility, which we recognize by a cold skin, clammy, cold sweats, cold tongue and breath, spasms, dejections from the bowels, emesis, &c., associated with, or arising out of, this state of the system; there is a tendency to decomposition of the blood, and our observations lead us to believe, that when it takes place, it is quite suddenly, and always a fatal occurrence. Patients do sometimes appear to labor under the symptoms of collapse, and after remaining more or less time in this state, from the period of a few hours to some days, they begin to revive, and sometimes recover; and these cases occur under every kind of treatment. In such cases, the disease is only progressing into an incipient stage of collapse. While the blood retains its integrity, and there is a sufficient quantity, the patient hangs on to life, however feebly; but a change of the blood, amounting to decomposition, is incompatible with life, and any continuance of the symptoms is but a stage of profound asphyxia, admitting of no resuscitation.

CASE OF REMARKABLE AND SUCCESSFUL ANTIPHLOGISTIC TREATMENT.

From the Hospital No. 1 we had the case of William Oliver, reported by Dr. Mackenzie, and in it we have a strong speci-

men of the advantages of the antiphlogistic plan of treatment. We have already informed the reader, that, excepting opium, we used no stimulants, either in our hospital or private practice, during a considerable part of the existence of cholera. We were informed that the patient took, before he came in, five grains of quinine at a dose, afterwards, three grains every hour; also, full doses of camphor and ammonia in combination, with large doses of calomel. Shortly after his admission, he had a small watery evacuation, of a dark brown color; pulse feeble; tongue covered with a dark brown fur, surface warm; slight pain in the stomach. Does not recollect having passed any urine since he was taken sick. There is yet no reaction, and yet Dr. Mackenzie ventured to discontinue tonics and stimulants, and relied on calomel and nitrate of potass, and the alkaline solution noticed in different parts of this work. It is said that the "surface was warm," but this must be understood to be moderately so, since Dr. Mackenzie thought proper to direct "hot sand to the extremities," when the patient came in. The day after his admission, he had several dark, bilious passages; "the tongue is brown; the pulse improved, small quantities of urine passed." The same medicine continued. Second day after admission: free urinary discharges took place, and he had dark passages, very offensive. But what is most particularly to our purpose, the stimulant plan was dropped, and refrigerant medicine given, and the patient rapidly recovered. This case shows in a strong manner the safety and advantage of the free use of calomel, and that a moderate ptyalism is no obstacle in the way of recovery. The particulars of this case go to support the opinion which we have elsewhere expressed, that we never, in any case, could observe well-marked benefit derived from the use of stimulants or tonics. On the contrary, we have again and again seen cases that were stationary, or growing worse, under the use of stimulants or tonics, rapidly grow better upon changing from the stimulants to a plan strictly antiphlogistic; and as regards medicine, no one, or any combination, was so obviously and so uniformly useful as pretty free doses of calomel and nitrate of potass, preceded mostly by a large dose or two of opium and

calomel. These remarks were published in our Journal for 1832, and we have had no cause to alter our opinion, except in one season, when cholera broke out in the Baltimore Almshouse, and about one hundred deaths took place in a few weeks. There was then a few sporadic cases in the city, in which we used Sp. Turpentine in dessert and even tablespoonful doses, and with decided success. From what we have seen of the effects of turpentine in the treatment of puerperal fever, we must view it as being mild and peculiar in its stimulant effects.

We have now given nearly all the information derived from our hospital practice in 1832; but we have been led to believe that a brief sketch of circumstances, which came under our notice in private practice, are worthy of preservation. It seems to us proper to precede our professional remarks by a brief notice of the localities of the epidemic cholera of 1832.

SPECIALITIES IN PRIVATE PRACTICE IN BALTIMORE IN 1832.

It will be observed, by turning to our hospital reports, that the disease first appeared in Ruxton Lane; but it subsequently spread through most of the city, and was by no means most prevalent in localities liable to bilious diseases of a high grade; but, especially, there was no affinity in this respect between places in which the yellow fever usually has prevailed at long intervals in former years and those in which epidemic cholera showed itself. In some places, crowded streets and alleys suffered most; but there was exceptions to this, so that, in some instances, where we might have looked for cholera to exist, it appeared slightly or not at all, while other localities, remarkable for their salubrity, suffered in greater degree than those in which yellow fever is most commonly seen.

A very large part of Baltimore is wholly exempt from yellow fever at all times; but it was seen that cholera was not confined to any fixed bounds, whether we look to location simply, or location associated with general healthiness. Several persons were said to have died in one part of Liberty Street, most of whom were persons of respectability. One little girl, aged

seven years, was, we believe, the first victim to cholera in the epidemic of 1832. In Baltimore, intermitting fevers are not so common in yellow fever locations as in our suburbs, and it may be said of cholera, it did prevail in yellow fever districts, but prevailed most in districts subject to intermittents, with one exception, in Liberty Street, where we are not aware of intermittents having prevailed for many years. It is proper to observe here, that that part of Liberty Street which suffered most from cholera is alluvial or made ground, there having been, in former years, a large gully, which served as a drain for a large portion of the upper part of the city; but this has long since been filled up, and the parts around have been well improved by clean substantial buildings. Notwithstanding this apparent affinity between the locations of intermittents and epidemic cholera, but few intermittents were seen during this summer. At one time, about the end of August, our diseases assumed more of a bilious character, and afforded strong hopes in our mind that cholera would decline; but, in a few days, febrile diseases assumed more of the choleraic aspect, and bilious affections declined. In making this remark, we wish to be understood to speak of pure bilious affections, which are known by the term, bilious fever, since we found bilious derangements of various kinds to prevail extensively in choleraic patients whenever cases became protracted, and we have already remarked that malignant cholera, as it appeared with us, wore more of the livery of yellow fever than of common remittents and intermittents.

Deeming it our duty, as health physician for the city, on the outbreak of cholera, to give some advice respecting precautions as preventive of the disease, in alluding to diet, we suggested that it might only be necessary to diminish the usual quantity of food, observing a guarded temperance; but before the disease had long existed, we had reason to change our opinion, in consequence of having seen some cases of cholera arising from the use of certain articles in which the effect followed the use of the articles so speedily as to leave no doubt of the evil, which sometimes arose from partaking of fruits and many of our common vegetables.

It may not be amiss to give a recital of some of the more remarkable cases that came to our knowledge. A respectable woman, in the country, informed us, that her son and two fellow-laborers in a factory, being about to visit the city, she strictly charged him not to eat of water-melon, which was reputed to be particularly unwholesome. Deeming her caution the result of timidity, they purchased a small melon, and ate it on the way home, and were all three presently overtaken with severe sickness and vomiting, and reached home with difficulty. The disturbance went off after some time. Had they eaten a little more, or had their systems been much disposed to cholera, death would probably have been the result of the disobedience.

Another instance of immediate suffering after eating water-melon was related to us by a medical friend. A colored man bought a water-melon in market, and ate it, as he probably was accustomed to do; immediately after having done so, he was seized with violent colicky pains. A bystander, seeing his distress, desired him to hasten to the dispensary, some squares off. He set off, and ran till he dropped down in the street, wholly unable to proceed further. A physician of eminence did all he could for the man, but he died in about seven hours after the attack. The following incident was related to us by a friend: A colored man was seen sitting on one side of the street, having in his possession a water-melon. He was overtaken by an acquaintance, who asked him, jestingly, what he had there; he replied he had a mess of cholera. The melon was shared, and eaten by them: early next morning one of them died, and the other in less than twenty-four hours.

A young gentleman, of temperate habits, refused, during part of the cholera season, to abstain from the use of vegetables, as the rest of the boarders in the same house were doing. While they abstained in the general use of vegetables, he refused to do so, and contended that cholera was the disease of the vicious, and that he could use vegetables and fruit with impunity. During the height of cholera, he one day partook of fried egg-plant, and after dinner ate some peaches: in a few minutes afterwards, he was seized with violent symp-

toms of cholera, and after a few hours of the most agonizing sufferings he died. All such cases require copious bloodletting.

The following particulars were reported to us of the case of Dr. Cromwell, of Baltimore. This gentleman, while he admitted the propriety of a very sparing use of vegetables, insisted that peaches were wholly innocent. A gentleman seeing the Doctor buying, at a time that few persons would have ventured to have eaten them, asked the Doctor whether he believed them to be a safe article. The Doctor replied, that, as a proof of his belief in their innocence, he had just been buying some for a sick friend. A few days after this, he partook of plums, cantelope, and peaches, at dinner. In a few minutes he was seized with violent cholera, and, notwithstanding the early use of medical treatment, he died in a few hours.

Dr. S. B. Martin had a little girl under his notice, who, while in perfect health, ventured to eat of green peaches, which her playmates refused to do. In a few minutes she was seized with severe symptoms of cholera. The children who had been with her during the afternoon, and who did not eat any of the peaches or other fruit, were not affected with cholera during the season.

We were requested to visit a family, while the cholera was raging, to see four children quite ill from having eaten green apples; they were affected with severe symptoms of cholera morbus. The doctor had already given them mild emetics, which, in every case, brought up the apples which they had eaten. These children were treated with appeasing remedies, and they soon recovered. We could enlarge to great extent occurrences similar to those noticed; but enough has been presented to show that the disease was excited into play by vegetables; and fruits in particular; we shall now offer a few remarks upon a few cases of a different kind.

A young man of correct habits, in good health, was boasting, on Sunday, that he had eaten of everything usual during the cholera, and that he had no fears for the disease; he ate freely of vegetables; on Monday he partook freely of cabbage, was soon afterwards taken violently ill with cholera, and died before

daylight on Tuesday morning. This is one of many similar cases that came to our notice; but we need not extend our remarks further. Almost every person was aware of some impairment of their digestive organs, and that vegetables and fruits were improper, either at meals or intermediately. We met a few persons who, towards the close of the epidemic, boasted of having lived as they always had done and with impunity. But, independently of the risk of cholera from eating certain articles, so common were symptoms of indigestion, and slight complaints of the stomach and bowels, that the latter alone would have required an abandonment of the more indigestible articles of food or luxury.

The present writer was directed in the regulation of his diet by the condition of his stomach. Aware, before cholera had made its appearance in this country, that certain articles of food were hurtful to persons predisposed to cholera, he early advised the citizens of Baltimore to eat sparingly of whatever was hard of digestion, and, accordingly, he continued to eat sparingly of the vegetables of the season. As the cholera more nearly manifested itself, he clearly perceived that such articles began to incommode his stomach, and he was made very uneasy at the stomach by eating a little peach and milk. Acidity and flatulency and gastrodynia occurred, and kept up a good deal of distress for several hours. Several friendly admonitions of this sort attended the use of improper food, and also succeeded the use of more allowable articles taken a little too freely. Thus admonished, without stopping in an extreme pressure of business to imagine anything unreal, we endeavored, free from any anxiety, to regulate our diet according to circumstances. We reduced our fare to one sort of plain meat at the same meal—bread, butter, potato, and rice, with a very small portion of milk, also a little tea and coffee. All things were used in quanties less—more than one-half—of our former habits. We were engaged in the most active duties from six o'clock in the morning till ten or eleven at night, with but a few minutes to dine; we fatigued two horses daily for several weeks, and were frequently knocked up at night: we were always sensible that we ate enough.

A large majority of cases, which we saw throughout the season, did not tend strongly, as far as we could see, to terminate in collapse; for, wherever early application was made, the disease was arrested before that stage of the disease was reached. But we saw, now and then, cases, with much regret, in which the change from ordinary symptoms to extraordinary diseased action was so sudden as to leave no room for foreseeing the symptoms that constitute the malignant stage of the disease. This will be most easily shown by exhibiting the circumstances with some cases on both sides, that is, cases which suddenly assumed malignancy, and others which presented symptoms quite alarming, but yielded to treatment, because, as we suppose, in the latter case the blood still had reliable qualities.

About the time that the cholera was most rife in 1832, Lewis G. Wells, a colored man, who had devoted several years to the study of medicine, under favorable circumstances, had become a busy practitioner among our colored people. The cholera, having extended, made room for the most active exertion on his part, to administer to the wants of those affected with the disease. We do not know much of his views or of his treatment; but we have been informed that he placed a good deal of reliance on dry-rubbing, and was in the practice of applying the remedy himself. He was engaged for several days in running about among his patients, and almost constantly engaged in active rubbing, which was calculated, in a high degree, to exhaust his strength, and predispose him to the disease. In passing, for the last time, from his office to his dwelling, about twelve o'clock at night, he observed, when near his house, to his wife, that he felt a good deal unwell, and if he should be overtaken with cholera so suddenly or violently as to render him incapable of doing for himself, he wished her to confide the case to Dr. Jameson. In a few minutes he reached his home, and threw himself down upon the carpet, observing that he was very unwell. He was immediately seized with violent cramps, particularly violent in his legs. His wife and family were directed to rub his legs freely and somewhat hard; after some time he attempted to bleed himself, but did not succeed,

owing to the incessant violence of the spasms. At daylight, we were sent for, with a view, as the messenger said, of bleeding him; aware of the danger attending the disease at that time, and believing this man's life important to his colored brethren, we hastened to his relief, and found him in the last stage of collapse. He had been lying on the floor since twelve o'clock at night, and during all that time he had been under active rubbing, and now cried out incessantly, "Rub down! rub down!" The pulse was gone; skin and tongue as cold as marble; though still sensible, he was prostrated beyond all possibility of recovery. Being in an agony of suffering, we gave him a large dose of laudanum, telling him, however, at first sight, that his case was too far advanced to admit of the slightest hope of recovery. He coolly, and with a degree of indifference which, we think, was common in such cases, desired us to take charge of some pecuniary concerns of his. His sufferings were heart-rending, we were informed, for more than an hour after we saw him, when he quietly expired. From what we have since seen, we feel confident that if we had seen this patient a short time after the attack he might have been saved; his bowels were not acted on during the night; he had diarrhœa during the preceding day, but not such as to alarm him, or to interrupt his business. But, the strength which enabled him to walk home after the fatigue of the day, leaves room for the belief that he was then in a situation to be saved by bloodletting, to such extent as might have been necessary to relieve the spasms and brighten the color of the blood; which last we had seen in several cases. With a view of substantiating such an opinion, we shall detail a few other cases apparently similar, which yielded to that remedy. We did not bleed L. G. Wells.

BLOODLETTING IN SPASMODIC CHOLERA.

Our attention was called one morning, by a gentleman in the street, to the case of a colored man suffering the most

agonizing cramps. We found a stout, muscular man rolling over the pavement, with his mouth wide open, his limbs contorted, his pulse very tense, but slow, and his groans and shrieks were heart-rending, and had attracted a large crowd of people around him. He had not been drinking. The salt-water emetic being then in vogue, we speedily procured a pint bowlful of strong warm saltwater, and he drank it all willingly. We waited several minutes to see the effect; it had no effect whatever, and he continued to toss and moan as much as ever. Finding that he was not likely to vomit, we procured the necessary means, and bled him on the pavement, believing that, if we waited to get him to the hospital, would be to wait till too late. When we had obtained about thirty ounces, we perceived there was a slight change in the color of the blood; it was extremely dark and thick at first. The patient now observed that the pain had abated in his stomach; directly again, he said his stomach was entirely relieved of the pain, but it was very bad in his back. When about thirty-six ounces had been drawn, he remarked that he was entirely free from pain; but he was sick. The blood was now most obviously changed to a much more florid appearance. Being in a hurry, we now left our patient, and desired a boy, who was in waiting, to take him in his hospital-carriage and carry him to No. 1, so soon as his faintness passed off. Dr. Charles S. Davis was present, and agreed with us that there was about thirty-six ounces of blood. Soon after we left him, an attempt was made to take him to the hospital, but he refused to go, and a controversy rose up among the people, some insisting upon his going to the hospital, and others declared he should not be taken without his consent. While they were disputing, he arose amid the crowd, and flung his arms about as he walked off; in this way he set his arm to bleeding, and, it was said, he bled freely. He reached his stopping-place, his wife being a slave, some squares off; he soon regained good health without any medical aid. These facts were reported to us by a respectable friend, who felt an interest in the case, and saw the man at home; we think, however, that the dose of salt-water which he took would purge him, and this might aid the bleeding; and thus was he

relieved from a situation of great peril. If we may be allowed to give an opinion, after having seen much of the disease, we say, it was a decided case of cholera, and a few minutes delay would have proved fatal. The cholera prevailing extensively, and the undisguised suffering, and exceedingly violent cramps and convulsive contortions of the limbs, shows this to have been real cholera. The first drawn blood was very dark and thick, but by flowing freely it became florid.

During the height of cholera, we were called to see a young lady, who was said to be violently ill; upon our arrival, we found she had been taken suddenly ill; she had the most agonizing spasms, and required of her friends that they should rub her constantly and briskly; her skin was cold; her pulse sluggish and tense; unable to stand; tongue moderately coated yellow-whitish; countenance exhibited great distress and prostration, and there was an extraordinary degree of a feeling of sinking. We found Professor Potter with this patient, who asked us to confer with him, both of us having been sent for in the absence of the family physician. He was in the act of bleeding her, of which we approved, and we remained to see the effect. The blood was very dark; but, after a copious bleeding, the blood became of a lighter color, and the spasms of the stomach and extremities ceased; the pulse became softer and more free and frequent in its action; her respiration and expression much improved. Aware that this was a case of violent disease, and that the truce gained by the bleeding would be of short duration unless other remedies were employed, we remarked that we had some pills, containing ℈j. calomel and ij. grains of opium each; the Doctor replied that that was the very remedy he wanted, and we gave her one of them (these pills were only given on extraordinary occasions). In about three hours we found the patient in violent spasms, which were general, and we were told, that soon after we left the patient, she was so much better, that she was allowed to walk up stairs, having been, the first time, seized in the sitting-room below. We ascribed the return of the spasms to the walking up stairs soon after a copious bloodletting. We left the house under an impression that she would not survive the night; but she rallied,

and in a few days was restored to health. We are decidedly of the opinion that this young lady owed her life to a copious and timely bleeding, followed by a full dose of calomel and opium, and this followed, no doubt, by judicious treatment by the family physician.

About the same time of the occurrence of the above case, we were called to the case of another young lady of delicate health, who was suddenly overtaken with feelings of prostration, and strong sensations of syncope; severe cramps of the stomach; cold skin; countenance greatly anxious; respiration a good deal laborious; tongue slightly coated; pulse full or voluminous, with but little action. We never felt ourselves placed in more onerous responsibility. We had seen some patients speedily sink from the loss of a few ounces of blood; we had seen others in whom we had every reason to believe that death, which seemed to be near at hand, was warded off, and recovery obtained, by a copious bleeding. We tied up the arm, determined, as much as we could, to appreciate the effects of the bleeding as we proceeded. We soon, to our inexpressible joy, found that the pulse was improved, and the feelings of the patient rallying for the better; and in this case, as in many others, we were enabled to assure her that the danger was over; for we saw here, as in other cases in which the pulse reacted promptly, that the blood became redder, and the oppressed condition was relieved, and we had remarked that wherever bleeding seemed to act prejudicially the patient sunk speedily. In our own practice we had seen two cases in which bleeding was, perhaps, used too late in persons of vicious habits, and we saw several others in the course of the season wherein this circumstance was too manifest to admit of a doubt. This remarkable difference in the result of bleeding is sometimes to be seen in other diseases; but we think in none so frequently as in cholera. This will always be perplexing in cholera, since no positive rule can be laid down. The only general rule which we were enabled to lay down for our governance, was to apply bloodletting in cholera as we would in cases of hemorrhage from the lungs or stomach, particularly from the lungs. The patient that is as pale as death from pulmonary hemorrhage, may

sometimes be relieved by the abstraction of blood from the arm; in these cases there may be great muscular prostration, and cold surface, and yet the pulse exhibits some tolerable force, and we may be justified in drawing blood, which we know from experience will arrest the hemorrhage from the lungs. We need not stop to explain how it operates, it is enough to know the fact, and that however safe and salutary may be bleeding under proper circumstances, yet, if the heart and arteries are actually reduced below par, we cannot expect the sanguiferous system to react by abstracting blood, as we know we may in common cases in which there has not been too much direct exhaustion. So in cholera, while there is a certain amount of force or strength in the system, and the blood is found to be very dark, but ready to flow freely from a good orifice, we may venture to bleed; and, if skilfully applied, the result will generally be favorable, and afford oftentimes speedy relief, and in greater degree than we have seen in any other disease.

We have to state, that in nearly all the cases in which we saw very clearly marked benefit from bleeding, the rice-water evacuations were not a prominent symptom; there was in almost all cases of the epidemic more or less diarrhœa, but mostly not such as to excite much alarm. But many cases occurred where, after diarrhœa, spasms or cramps, cold skin, and great distress about the præcordia, a sudden change would take place of vastly increased violence of the cramps in the stomach and bowels, &c., accompanied with, or followed by copious rice-water discharges. We saw one of exceedingly violent spasms of the face. The same rule was followed here as in other cases in the use of the lancet, i. e., bleed as we would for arresting hemorrhage; suddenly lessen the force of the heart and arteries by abstracting blood while these structures are oppressed by over-excitement, and you thus arrest the morbid and overwhelming excitement present; but bleed after the vital forces are exhausted by the wasting of the serum of the blood, or the blood itself, and you can never cause the vessels to react, but by abstracting the vital fluids, already too small, your patient is irrecoverably exhausted and lost.

One of the most important circumstances connected with bleeding in cholera is this: whatever be the nature of the case requiring bloodletting, the period in which it can be beneficially applied is very short; we think a few minutes will make the difference for good or evil of the remedy in some few cases.

It has been supposed that in cases attended with wasting serous discharges, bleeding cannot be practised with prospect of success, because the rice-water discharges consist principally of the serum of the blood. It was this circumstance that led us to a correct view, as we hope, of the employment of bloodletting. If we see the blood pouring from the lungs, and our patient pale and apparently sinking, we know, by experience, that for a time, or until a certain amount of blood has been lost, we may arrest the further flow of it by abstracting a portion from the arm (see Cullen), and thus check a fatal tendency in the disease; so in cholera, a portion of the blood is passing off rapidly—divert the morbid action, which is, so to speak, pushing the blood or serum out through the exhalents of the bowels and the skin—you may thereby prevent the further escape of the fluids, and, as has been correctly said, sometimes it is better to bleed from the arm than that the blood should flow away in torrents through wrong channels.

In the course of the epidemic season, we had many opportunities for observing that, notwithstanding there was a good deal of febrile action in some cases, and that in all our dissections there was a turgid state of the vessels of the mucous coat of the stomach and bowels, and of the brain, still, we have never seen opium so generally admissible during the presence of symptoms which seemed to forbid its use. It was in the early period of the disease, however, that we observed the most decided effects from large doses of opium, and under such circumstances, to give it in small doses, to say the least, was useless.

We never saw a disease in which any remedy came so near the nature of a specific as did opium in the incipiency of cholera; for, according to our observation, it was suited to the disease in every form or stage attended with severity, and in scores of cases we have had the most pleasing effects from

large anodynes, particularly when opium was given in combination with calomel. So often did we obtain benefit from large doses of calomel and opium, that we gave it in many unpromising cases at the commencement with a degree of confidence little short of certainty; indeed, we may truly aver, that this combination did not fail to give relief, except in two or three instances in private practice, some of which we saw a little short of profound collapse. We met but a single case which ended fatally, where we had hope of recovery at our first visit.

We are too imperfectly acquainted with the pathology of cholera to attempt an explanation of the modus operandi of opium, but our experience with the article convinces us that, in combination with calomel, it had a powerful effect in checking rice-water stools, in allaying the irritability of the stomach, and in arresting cramps and spasms. When these symptoms set in violently and suddenly, it was safest to conjoin bloodletting with the opium and calomel. We saw one case of cholera in which the rice-water discharges were succeeded by complete ileus, attended by vomiting of dark, fecal matter in large quantities. In this case an emetic of strong salt water, followed by three grains of opium, in one dose, at once arrested the ileus, and the patient recovered in a few days.

We seldom gave more than one dose of opium; sometimes we repeated once. In a few cases it was given in small doses, in the form of Dover's powder, or laudanum and sp. of nitre, mostly where the spasms were rather obstinate than severe.

There was an unusual circumstance attending the use of opium in the cholera of 1832. In no case where it failed to afford relief, did it deceive by giving ease. If a full anodyne failed to give pretty prompt relief, the patient always perished; but when the patient was promptly relieved by the use of calomel and opium, they always recovered. We did not in any instance give more than six grains in twenty-four hours, and that quantity very seldom. This announcement was published in our Journal in 1832; since then, in a few cases, we have given as much as twelve grains in twenty-four hours, frequently eight grains, and we never had reason to believe we gave too much; but these are exceptions to a general practice.

REMARKS ON LOCAL BLEEDING.

Local bleeding has been a good deal employed, by leeching and cupping. The employment of these means must be attended with much inconvenience in time of an epidemic, owing to the time that is required for their employment; but independently of this, we never saw any clear indication for their adoption, and where these means were used, we never were sensible of any benefit being derived from the practice. The congestion of the vessels of the mucous lining is by no means inflammation. According to our observation, where sanguineous depletion was necessary, it was required promptly and copiously. This remark, however, applies to a real choleraic stage, or in the period or condition in which danger arises from a tendency to decomposition in the blood; and as a preventive or corrective for this tendency, we believe no dependence whatever can be placed on local bleeding. When this stage shall have given place to a more ordinary febrile action, and bilious symptoms, this remedy is no longer necessary. If there be any exceptions to this remark, they are very few. Now and then phrenitis supervenes upon the more ordinary symptoms of cholera. In such cases, local bleeding seems to be indicated; but as far as we observed, we never saw any positive indication for the remedy. In cases of great prostration, blistering the neck may be beneficial, and the use of Dover's powders sometimes had a good effect. We saw one case in which, after a severe attack of cholera, so soon as a state resembling convalescence appeared, the patient had symptoms of mania a potu, and had to be subjected to the strait jacket. He was bled from the arm with a most happy effect, and bleeding was repeated, to the relief and recovery of the patient.

However little we may know of the pathology of cholera, it is evident that one of the common effects of the poison is to impair the functions of the stomach, bowels, liver, and, indeed, all the abdominal viscera; so much so, that in many cases, long before the disease assumed its malignant form amongst us, in 1832, most persons were aware of some impairment in their

digestive organs; and hence it was, that one of the greatest difficulties attending cholera was to get our patients in a condition to bear food. In a great majority of severe cases, the digestive functions were much weakened, and it was with extreme difficulty patients could resume the use of the mildest articles of food. We had often seen injury arising from the use of improper food in bilious and other fevers, but never did we see anything bearing any comparison with this circumstance, as it stood related to cholera. At both hospitals, patients injured themselves in that way, in despite of all precautions, and some of them died from their imprudence. In many instances, nothing but gruel, sago, toast-water, common tea, or other drinks equally mild, could be borne for upwards of a week, although convalescence progressed slowly; and often, in private practice, we had considerable trouble in getting our patients to resume their accustomed food, owing to liability to diarrhœa and pain in the stomach.

REMARKS ON EXTERNAL HEAT IN CHOLERA.

So soon as we saw the disease in its malignant stage, and beheld the shrivelled, hardened, and cold state of the skin, and this attended mostly with cold, clammy exudation through the skin, we were led to expect much benefit from the application of dry heat, and stimulants externally applied. We soon found the regular and effectual application of heat to the surface almost impossible; and, so far as we could discern, no good was derived from it in most instances, if in any. Nor was it long before we were led to believe, that no benefit from the use of stimulants to the surface, except sinapisms to the stomach, and blisters, with a view of relieving that point from pain or distress, were useful. As far as we could judge, we never saw external stimulants useful in overcoming a dangerous amount of coldness of the skin or extremities, nor did they ever improve the vascular action of the skin, or relax or soften it,

raise its temperature, lessen the exudation, or impart a more agreeable state of feeling to the sick. Such being our conviction early in the disease, we entirely discontinued the use of external heat and stimulants, so far as any supposed influence they might have in arresting the disease by operating through the skin, upon vital internal organs.

THE EXTERNAL USE OF LARD IN CHOLERA.

To us, it would seem to be as reasonable to expect to apply remedies to the knee for the relief of hip disease, as to expect to cure cholera by remedies applied to the surface. It does not seem reasonable, when we look at the deeply diseased state of the skin, that we can operate sufficiently through it upon the internal organs; it is enough to expect of this important structure, that it can be relieved of its own share of the disease by means applied to it. But as much evil grows out of the escape of serum through the cutis vera, and diminished supply of blood in the capillaries, it is important that we counteract this morbid condition. Seeing the good effect of oily applications in erysipelas and phlegmasia dolens, and also recollecting that Dr. Scott, about fifty years ago, employed olive oil with good effects in a severe fever, somewhere in the East Indies, we were led to try it in the sweating state of epidemic cholera; besides, in an ardent fever of a child, we applied Scott's method successfully. Hog's lard being a softening, oily substance, and this having been used by Dr. Calhoun, of Philadelphia, instead of mercurial ointment, which had been recommended by Dr. Little, of Pennsylvania, and the lard being cheap, and well suited to hospital practice, we introduced it into our Hospitals No. 1 and No. 2. It was soon seen that this article softened and warmed the skin in much greater degree than stimulants, and also lessened the exudation through the skin more effectually than anything else. Indeed, in nearly all cases, with a few repetitions, it checked the perspiration, and improved the

dermoid tissue in respect to temperature, pliability, and removal of wrinkling, and in all respects imparted a more healthful aspect to this structure. The gentlemen who had charge of the hospitals were well pleased with the results of this remedy. We now recommend it as a very important remedy. The late Professor Potter, having used this remedy, promised more than once to write in favor of it.

This seems to be a proper place to state a case in which the application of the lard was attended with a very happy result. A professional friend had an attack of cholera, pretty early in the epidemic of 1832; it terminated in a tedious typhoid fever, that lasted some three or four weeks, and was attended with annoying and debilitating night sweats, which baffled everything that could be thought of. Sleep was greatly interrupted by cold, clammy perspiration, night after night. We directed a free and general friction with melted lard. It had the effect, by a single application, to restore the skin to its normal condition, and he rapidly regained good health. So prompt and grand an effect from any remediate agent did not occur in our practice during the cholera epidemic, except from the use of the lancet, in a few cases. This gentleman reminded us a few days ago of this occurrence.

REMARKS ON PRECAUTIONARY MEASURES IN VIEW OF THE PREVENTION OF CHOLERA.

We have alluded, in this work, to the well-known law of epidemics, that they partake of a revolutionary character. There are certain periods of indefinite intervals, in which epidemic diseases appear and disappear, or change their nature from time to time, and appear with more or less force or peculiar modifications. We should, therefore, keep a watchful attention over our diseases from season to season, and endeavor to change our mode of living; otherwise, we are liable to be overtaken by epidemic diseases, which generally come in disguise, and find us too often unprepared for the assault. In

the late visitation (1832), the disease first appeared abroad, and gradually appeared nearer to us, and thus were we providentially enabled to make preparation for its reception; and this, no doubt, saved many who otherwise would have fallen victims to the pestilence. On some other occasion it may rise up among us when we are less prepared.

It is hoped enough has been said respecting epidemic cholera to prove its non-contagiousness. In Baltimore such an opinion has been a source of considerable saving of expenditure for supposed measures of defence, which did no good, and much anxiety, disease, and death, arose from the prepossessions, among a portion of our citizens, that the disease was contagious, and the evil was greatly increased by some of our medical men declaring that the disease was contagious.

EPIDEMIC CHOLERA THE PRODUCT OF A GENERAL ATMOSPHERICAL CONTAMINATION.

The astronomical observer may treasure up stores of knowledge among celestial bodies, measure their orbits and their velocity, but what does he know of the intrinsic nature of the principle of gravitation, or of the magnetic attractions of the poles?

He may observe the several modifications of electricity, and guide it in subserviency to his wants; but what does he know of its intrinsic nature? Of this mighty power we shall have more to say as we proceed. He may observe the laws and visible effects of light, and unfold the boundless panorama, the offspring of light; but what does he know of its incubation or its birth? We might thus go on and remind those who inquire into the things of nature, that in the most exalted philosophical studies of man he collects visible phenomena for use; but the grand principles are beyond the ken of finite mind.

Need we wonder, then, if, while we behold the atmosphere as one of the greatest works of nature, we are not able to discern but a part of its operations, except by their effects? One

of the wonders which we observe in its character is the uniformity or sameness of its *constitution;* but, nevertheless, we discern many changes and even vagaries occurring near the surface of the earth.

In the beginning of this work we have alluded to the views of Dr. Sydenham respecting secrete constitutions of the atmosphere, by which he means a state of contamination that has the quality of generating disease, and he maintains that these secrete constitutions give rise to ailments of a specific nature, differing only in some modifications in their characteristics and force.

We shall endeavor still further to illustrate the nature of the atmospherical insalubrious qualities. In the year 1817, we wrote out some essays, in the form of lectures, on the subject of fevers, embracing all the fevers of which we were then cognizant. The cholera was not then known as one of the destroyers of the human race, and there may be those who would exclude it from among diseases called fevers; but, we would ask, what else can it be? It is the result of an imbibed poison which gives rise to a condition of the system, in which Sydenham says, Nature, being oppressed, is unable to manifest the symptoms proper to the nature of the disease; and Rush would say, it is a misplaced fever, because the onus of the disease is not placed on those structures which, in more ordinary fevers, give rise to symptoms which we have long since known as the more pathognomonic signs of what may be termed genuine or true fever.

We consider the opinion here expressed of the highest importance, seeing, as we think we do, much error and evil growing out of a notion, which seems to prevail universally, that cholera is a subject the fit recipient of empirical practice. While we see the views of Rush prevailing everywhere where medicine is used as a science, we prescribe for the symptoms and stage of a disease, and not, as antecedently, for the name: in cholera the practice seems to have been almost entirely empirical. In every recurrence of epidemic cholera, practitioners, young and old, seem ever to be looking for specifics or nostrums; we might rather ask, what has not been tried than what

has been tried? We once knew an old practitioner, who took it into his head that there must be a specific or cure for yellow fever, and having the opportunity of seeing a good deal of the disease, he announced to the public, through newspapers, that he had gone the round of the Materia Medica, not omitting the most inert articles, such as prepared chalk, charcoal, &c., &c., the names of all which, amounting to hundreds, were announced, but some one or more; which were a sovereign cure for yellow fever, and this he cherished in his own bosom, for the world never found out what it was; and so people died of yellow fever just as they always had done. And let me inquire, whether, so far as practice is concerned, the regular part of the profession have not pursued pretty much the same plan of procedure in the treatment of cholera? We shall, in proper place, endeavor to give some account of the multitudinous medicamenta that have been employed in cholera, and also throw out some hints descriptive of the mode which seems to be required in the treatment of that epidemic, a strong point in which is to judge of each case as being peculiar: this will require a knowledge of the circumstances, symptoms, and the judicious adaptation of remedies to the ruling tendencies of the epidemic at that time. This, we opine, is the only way in which we can expect ever to treat the disease with better success than now obtains. In aiming at the accomplishment of all this, we must never lose sight of the important truth, that cholera is the offspring of a "secrete and inexplicable *constitution of the atmosphere*."

We hope our readers will excuse our occasional digressions as we endeavor to present cholera to their notice under every possible aspect; while our main purpose is to reduce matters to greater order, or to systematize what we deem most important, we now and then bring to view vistas that now and again fall in our way; in this way, we will be enabled occasionally to embody in our work reflections, observations, or remarks, that might otherwise escape annotation. Asking indulgence in this respect, we return to our observations on atmospherical constitutions, by which all epidemics are begotten and maintained.

The illustrious Sydenham paid much attention to the subject

of atmospherical constitutions, and thereby improved the practice of physic in an eminent degree: he candidly acknowledges the difficulty and uncertainty of this branch of medical learning: "If one were to examine all the branches of physic, nothing would appear so surprising as the different and perfectly dissimilar face of epidemic diseases, which do not so much relate to and depend upon the various seasons of the year as upon the different constitutions of years." And again: "And this manifest diversity of these diseases still further appears, not only from the proper and peculiar symptoms, but also from the different methods of cure they respectively require. Hence, it is clear that these distempers, though to less accurate observers they may seem to agree in their external face, and certain symptoms in common, are, in reality, of very different and dissimilar natures.

"This I am certain of from numerous careful observations, that certain diseases, especially continued fevers, differ so extremely, that the same method which cures in the middle of the year, may, possibly, prove destructive at the conclusion of it; and when once I had happily fallen upon a genuine method of treating any species of fever suitable to its nature, I always proved successful (proper regard being had to the constitution, age, and other particular circumstances of the patient), till that species became extinct, and a new one arose, when I was again doubtful how to proceed, and, notwithstanding the utmost caution, could scarce ever preserve one or two of my first patients from danger till I had thoroughly investigated the nature of the distemper, and then I proceeded in a direct and safer way to the cure." A more important medical truth was never recorded than what is here set forth, and it is necessary to be observed and adopted into use as far as possible in epidemic cholera; and although we may never reach the goal of our expectations in this respect, certain it is that this is the right road to the *high point* of which we are in pursuit, while intent upon rearing an edifice, wherein to imprison and chain fast the monster which scatters desolation over every land, and at this time over every clime.

It seems to us proper, under the present head, to offer a few

remarks upon causes, since it is our present purpose to show, as far as our abilities will enable us to show, that cholera is the offspring of *malaria*, and of nothing else; but it is of a dual character, and we must endeavor to show how that malaria operates upon the human body as a cause. The various causes, which have been spoken of by medical writers, may be referred to the following: 1. Antecedent or predisposing cause. 2. The remote cause. 3. The occasional or exciting cause. 4. The proximatè cause, according to the books; but cholera is characterized by duality of its cause—of this hereafter.

A great proportion of our diseases arise from *specific causes*, and such causes always give rise to *specific diseases*, and this truth is especially manifested in epidemic cholera; but it is difficult to distinguish a specific cause sometimes from *susceptibility*. And, we think, this applies to cholera, which is the offspring of a compound cause. There is at the present time, and, indeed, for several years past there has been, a pestilential condition of the air, wide-spread as the inhabited world, which operates in the production of a susceptibility to cholera, which, of course, impairs the system perniciously. We suppose that the peculiar morbific principle, which leads to that disease, is brought into play by some chemical union with whatever established that perniciousness; and this, so far as the epidemic operations are involved, seems to be a modification of the ordinary miasm, which gives rise to remittent and intermittent fevers, that is, this poison is probably formed of the usual elements differently combined, so as materially to alter the properties of the miasmatic poison. It may be said here, that this is mere matter of opinion; but how shall we more rationally apply the facts connected with the production of *universal cholera;* for we are certain there must be some material which exerts a baneful influence over a large portion of the world; well, then, where is it? can it be anywhere but in the lower stratum of the atmosphere? Then, as to the special locations, we see the disease existing almost exclusively in fever districts; what can it be, seeing that it is seen in many places usurping the place of fever, which heretofore prevailed, more or less,

till cholera assumed the mastery, and principally in the fever season.

We sometimes see sporadic cases of cholera. We see the same thing of yellow fever. Yellow fever, however, is always limited to narrow space, and, so far as we recollect, never was more extended than it was in Philadelphia in 1793; but cholera is so wide-spread, and has had so protracted an existence, as to establish incontestably the fact, that the air we breathe is its abiding-place. This state of things keeps up a peculiar susceptibility in the human system, from which, we believe, that almost any violence or disturbance of the healthy economy may give rise to cholera; but no one, who has not been under a choleraic influence, has ever had the disease. It may be admitted, however, that the system being impressed with the choleraic susceptibility, that impression may not wear out immediately upon an individual leaving the dual choleraic atmosphere; but in the present day of the choleraic perniciousness, it is impossible to get rid of it, and it follows that there is liability to cholera everywhere, but in the slightest imaginable degree, except where it usurps the power of ordinary miasm, and, in these locations, it almost never remains more than a few weeks in its malignant character, sometimes only a few days. Is it not a fair inference that there is, so to speak, one great morbific influence, for some time past, which has become an integral of the atmosphere everywhere; but it is only in certain malarious locations that the choleraic influence becomes dualized, and is stirred into its deadly assaults; and do we not find here that two things, in the nature of causes, are present? the one general and the other local. The former at present is inscrutable; the other, it is said, has become tangible only so far as we see it domiciliated in certain districts. One thing is beyond all doubt or question, and that is, whatever may be the predisponent cause of cholera, it is evidently different from anything which was known in Europe or the United States until about 1830, '31 or '32. Are we, then, not bound to conclude that this is a new thing, and there are cogent reasons for believing that the sun and electricity, if not the parents, do exert a primordial agency in the production of the new poison,

which may be by direct or immediate influence, or by co-operation with new material arising from the face of the ground; but where shall we find a guide? so far, we have had none but blind guides. Something there is, but of its origin, or of its intrinsic nature, we are ignorant; but its outward character is known, and, like the whirlwind, it rides unseen in the storm.

Attempts have been made to trace the spread of epidemic cholera westward for two or three years past, by means of contagion, but we do not see how such an opinion can be entertained after the great number of reports of its occurrence epidemically in all countries, showing that, with few exceptions, it has been preceded by an insalubrious atmosphere, which gave rise to disorders differing from cholera only in being milder; and, again, in many different cities it has spread so rapidly through many streets in a few days; indeed, we might say truly, the cholera, when it assumes the malignant stage, is always in a hurry. In many towns, and in some country locations, it is like the alighting of some evil genius,—it smites a few victims, then, with seeming satiety, seeks other victims in other places.

In Hamburg, it appeared in upwards of one hundred streets in four weeks, and yet the mortality was moderate, considering the deadly nature of the malady during "its reign of terror," which, thank Heaven, is always brief compared to small-pox and some other diseases, which linger year after year in large cities, through all seasons of the year. We purpose devoting a section of this work to the question of contagion, and therefore forbear making any further remarks in this place.

ELECTRICITY AS RELATED TO CHOLERAIC AFFECTIONS.

It seems proper that we call the attention of the reader, for a few minutes, to attempts that have been made to show that certain phenomena connected with the atmosphere are the cause of epidemic diseases; there have been advocates for the opinion that electricity is one of the agencies in the production

of disease. This grand principle invades all space, and is, truly, protean in its nature, and is, in many respects, a controlling power over created things in every department; but has, and is likely to continue to elude all our inquiries respecting its influence upon the diseases of the human body. That it bears an important relation to the causes of our diseases, and upon the diseases also, is manifest. If we look at the beautiful plumage of the bird tribes, or the gaudy butterfly, and the flowers of every clime, and believe that every tint and every form are the rich productions of electricity, we might be led to believe that it has an agency in whatever concerns our welfare, and no less in the causes of our diseases; but, admit this opinion, and we are no wiser as regards the intrinsic nature of the causes of epidemics or other diseases; we may, therefore, dismiss this point of our subject as beyond our scrutiny and our comprehension; but we shall hereafter examine some new views of Schönbein. Attempts have been made to show an influence over disease by lunar and sol-lunar influences, in which Dr. Mead took a conspicuous part; the animalcular theory has also had its blind guides.

SUMMER AND AUTUMNAL DISEASES, WITH OBSERVATIONS.

This seems to be a suitable place for introducing the subject of prevention; by observations, &c., on *causes* immediately and obviously productive of our diseases of the summer and autumn; the more so, on account of the cholera reigning, almost always, in places annually subject to bilious fevers. This condition of things prevails so manifestly, that we may, therefore, assume the position, that the causes of these diseases are nearly similar; and on this ground we proceed to review some observations, and to inquire into the subject of the causes, and the means of prevention, of summer and autumnal fevers, by Rush; for whatever will counteract the influence of miasm, as related to bilious diseases, will have some influence in the prevention of epidemic cholera; differing, however, in this: the

poison, producing common fevers, acts as a specific cause, while in cholera it is only an *additamentum dualis* to an atmospherical deleteriousness.

We find that our illustrious countryman, Rush, has left some facts and reflections upon this important subject, on which we shall now offer some comments, and abridge what he has said, which, to us, shall seem proper and useful, without the formality of quoting exactly what he has said, giving, however, nothing to alter his meaning without saying so.

Dr. Rush first refers us to exhalations from marshes which give rise to miasm, which, he says, is supposed to be the product of a mixture of vegetable and animal matter. He then goes on to give a list of many vegetables, which, in heaps of more or less bulk, have been known to be the cause of bilious diseases. We deem it unnecessary to follow out these details; some instances in a small way may be erroneous, but as to their general deleteriousness, there is no doubt. We will here briefly narrate a remarkable case which came under our own notice. At a time that yellow fever prevailed epidemically in Baltimore, five gentlemen occupied what was called the old Exchange, as an auction store and office. They all were seized by the fever within a few days—four of the five died. The Board of Health, being called to the premises, found the cellar under the office in a most filthy condition—potatoes, onions, and other articles were there in a state of putrefaction. These were removed, the cellar limed, &c., and the evil seemed to be arrested. The business of the house was of course broken up, but the disease did not spread across the street, which at that point was upwards of one hundred feet in width, but not much more. During the time of the attack of those below, there lived a poor man and his wife, with several children, in good health, but they did not use the same front door, but went out and in on another street, and did not occupy any part down stairs. Is there not very good reason to believe, that had the epidemic cholera been prevalent at that time, that those gentlemen who fell victims to yellow fever would have been destroyed by cholera?

The author before us enumerates among things likely to pro-

duce summer and autumnal disease, the contents of privies, and tells us that privies are sometimes the origin of dysentery and diarrhœa, and he says, that during the American war, an American regiment, consisting of 600 men, were affected with dysentery, from being encamped near a large mass of human feces, and that the disease soon was checked by removing their encampment to a distance from it. We were once cognizant of dysentery being occasioned by exposure to the same sort of filth. A privy which had served the purposes of a pretty extensive hotel, in an inland town, without being cleaned out for many years, was emptied in the summer season. A most terrible stench was produced in one of the streets, by scattering a good deal of the contents of the privy; in a few days, several families were affected with severe dysentery, while no cases occurred in any of the other streets.

Dr. Gordon informed me, says Dr. Rush, that 500 persons died of the yellow fever in Berbice, between July, 1804, and May,1805, during which time there fell but three inches of rain. The earth in this case was very dry and parched. Bilious fevers, Sir John Pringle tells us, occur in a part of Holland in very dry seasons, but in these cases the earth cracks, and putrid exhalations escape from water which stagnates below the surface. We are not always able to explain these apparent anomalies, but when the matter is established, that certain material is the source of malaria of a peculiar kind, there is scarcely room for doubt, that that kind of malaria can only arise from the same condition of things, though all may not be apparent—specific causes can only arise from the same product in all cases.

Dr. Rush, after noticing the several diseases of summer and autumn, says: the means of preventing the different forms of fever that have been mentioned, come next to our consideration. Happily for mankind, heaven has kindly sent certain premonitory signs of most of them. These signs appear, 1st. Externally, in certain changes in the previous diseases, in the atmosphere, and in the animal and vegetable creation. 2d. In the human body. The first external sign that I shall mention is, an unusual violence in the diseases of the previous year or

season. Many proofs of the truth of this remark are to be met with in the works of Dr. Sydenham. It has been confirmed in Philadelphia in nearly all the malignant fevers since the year 1793. But there is an exception to this remark, for we now and then observe uncommon and general healthiness before the appearance of a malignant epidemic. This was the case in Philadelphia previous to the fevers of 1798 and 1799.

The author before us thinks that substances painted with white lead, and exposed to the air, suddenly assuming a dark color (the ozonometer will indicate impurity); and winds from unusual quarters, and unusual and long protracted calms, indicate the approach of a pestilential disease. The south winds have blown upon the city of Philadelphia ever since 1793, more constantly than in former years. Malignant and mortal epidemics are often preceded by uncommon sickness and mortality among certain birds and beasts. They have both appeared, chiefly among wild pigeons and cats, in the United States. The mortality among cats, previous to the appearance of epidemics, has been taken notice of in other countries. Dr. Willan says it occurred in the city of London, between the 20th of March and the 20th of April, in the year 1797, before a sickly season, and Dr. Beniecia says it preceded a mortal epidemic in Paris.

The common house-fly had nearly disappeared from our cities, mosquitoes have been multiplied, and several new insects have appeared just before the prevalence of some of our late malignant epidemics. Among things indicating an altered atmosphere, Rush mentions a knotty and imperfect state of our fruits, and that condition has preceded some of our epidemics. Besides those above, our author enumerates several other occurrences, which seem to have some relation to the atmosphere, as regards its influence upon diseases. Our object here is to awaken public attention, as well that of our municipal officers, as that of our faculty, and the citizens at large.

MEANS THAT ARE SUITED TO PREVENT THE SPREAD OF OUR EPIDEMICS, IN THE FORM OF SUMMER AND AUTUMNAL DISEASES.

We have elsewhere remarked, that epidemic cholera is seen to occupy locations where summer fevers usually appear, and it will follow, that as the cholera comes in almost all cases as a sort of substitute for summer fevers, the same precautions or preventives will apply to both. Dr. Rush speaks of such as are proper to protect individuals, such as are proper to defend whole communities from the disease, and such as are proper to exterminate it, by removing its cause.

Where flight is practicable, says Rush, it should be resorted to in every case, to avoid an attack of malignant fever. The heights of Darby and Germantown have for many years afforded a safe retreat to a number of the citizens of Philadelphia, from their late autumnal epidemics. We had a happy corroboration of this truth in Baltimore, in the year 1821 and '22. Hundreds of the lower orders of the people were removed upon an outbreak of a very mortal yellow-fever epidemic, whereby several hundred lives were saved; and all those who were able, as respected the means, were required by ordinance to remove, on notice from the Board of Health. The opinion just advanced will require some qualification. Thus, in small towns, or neighborhoods of small extent, it will apply in all its force wherever the cholera appears with startling malignancy; removal will be attended with the happiest results; but in cities of great extent, it is of much less importance, because the disease is more diffused than in summer fevers. The former cannot be known precisely as to location in most cases, but fevers are more specially confined to limits which do not vary much, and, as regards yellow fever, varies but seldom.

Dr. Rush mentions many things which were supposed to be preventive of malignant fevers; many of these are cases of single occurrence, and therefore not to be relied on; we therefore pass over them, and proceed to notice a few others, but wish here to remark, no violent changes should be made in

any of the common affairs of life; but where matters have been at fault, changes for special causes should be made gradually. The author before us says, all those citizens who used garlic and onions (freely, we suppose) escaped the yellow fever in 1793. We have thought proper to notice this important item, but what would be the result of it in choleraic seasons, we will not undertake to decide. These articles afford a mild stimulant article of food, and would probably maintain the system for a short period in less bulk than things generally in use. We were somewhere told, by Rush, that the highland shepherds of Scotland will pass the whole day upon a single onion. How far the people of Paris use these articles, we cannot say, but the French are reported to use them extensively. We have been informed of the mortality from cholera at Paris at its first appearance there. So far as we recollect, the mortality there was greater than it ever has been anywhere else, and it will be more or less so wherever active stimulants are relied on for the cure of "misplaced fever," and cholera is nothing else.

Among the exciting causes which give rise to malignant fever, Dr. Rush puts down heat and cold as leading ones, and he says, while the former has excited the yellow fever in thousands, the latter has excited it in tens of thousands. It is not in the middle latitudes only that the cold awakens this disease in the body. Dr. Mosely says it is a more frequent exciting cause of that, and of other diseases, in the island of Jamaica, than in any of the most temperate climates on the globe. It is this which renders cases of yellow fever, when epidemic in our cities, more numerous in the months of September and October than in July and August. This being the case, the means of obviating the pernicious effects of cold are evident to every one; we must dress warmer and sleep warmer, and fire, in sitting-rooms, will be useful upon sudden changes during a choleraic atmosphere, particularly in wet weather. Cholera mostly sets in in warm weather, say August and September; there are exceptions in the Middle States; but even in August this precaution is important at times in some parts of this country.

Many persons found safety from the plague of 1665 by flying to ships which lay in the middle of the Thames, and, it is well known, no instance of yellow fever (says Rush) occurred in those Philadelphia families that confined themselves to ships in the middle of the river Delaware in the year 1793. The author before us tells us that large fires have sometimes been made in cities to destroy the miasmata of pestilential diseases. They were obviously hurtful in the plague of London in the year 1665. Dr. Hodges, who relates this fact, says: "Heaven wept for the mistake of kindling these fires, and mercifully put them out with showers of rain." We deem it a duty to state that in the month of September, during a spell of unusually warm weather, and during the prevalence of a very malignant cholera, at Columbia, Pennsylvania, we found many very hot fires of large piles of stone coal, which obviously added to the heat of the air, and filled every space with a sulphurous smell. We at once objected, and we know not what influence our opinion may have had, but, on a second visit, these fires had been extinguished. We are not certain that much evil arose from those fires, since the principal mortality had occurred before they were in use; but we could not reasonably suppose that fire within view would improve a choleraic disposition of the air, or be any better than the employment of it in epidemic bilious diseases.

DISSECTIONS MADE AT THE BALTIMORE CHOLERA HOSPITALS.

1. Dissection of the body of Aaron, a black man. The lungs were nearly natural; heart flaccid, left ventricle empty; in the right ventricle there was found a few drops of dark *coagulated blood;* liver pale; gall-bladder distended with green bile; stomach much congested and traces of black mottling; intestines congested; bladder contracted.

2. Post-mortem.—A woman: heart flaccid and empty; liver pale; gall-bladder distended with yellow bile; stomach had a

quantity of rice-water matter in it; some bile in the intestines, and the coats very much congested, and also that of the stomach; bladder contracted to the size of a walnut.

3. Dissection.—A man. The lungs natural; heart more firm than previous cases; some blood in both ventricles of a black color; liver not so pale as former ones; gall-bladder distended with green bile; stomach very much congested with reddish matters in it; intestines highly congested, and a little bile in them; bladder contracted.

4. Case of Dissection.—A male subject. The nails of the fingers and toes were purple; the skin much corrugated; the lungs somewhat congested; in the heart a small quantity of dark liquid blood; liver pale; in the stomach there was a quantity of rice-water serum; the intestines congested; the kidneys natural in appearance; no urine or urinous smell; slight traces of black mottling.

5. Post-mortem.—A man. This dissection discovered the inner coat of the stomach and intestines to be much congested, and also the brain.

6. Dissection.—A woman. In this case the lungs were nearly natural; in both ventricles of the heart there was found some very dark blood; the liver not so pale as other bodies which had been examined; the liver not very pale, a little blood in it; the gall-bladder distended; the stomach and intestines not as much congested as in other cases; in the spleen there was some dark blood; the bladder contracted to the size of a walnut.

The foregoing dissections are copied from the hospital reports of Dr. Carrere, at Hospital No. 2, for 1832.

We shall now proceed to present a few cases from Dr. Mackenzie, at Hospital No. 1, for 1832.

1. Case was that of a colored man. In the stomach and intestines, particularly the stomach, there were three large dark patches on the mucous coat resembling incipient gangrene; the liver pale; the gall-bladder was nearly full of dark-green bile; the heart contained a considerable quantity of thick black blood; the bladder was contracted to a very small size; no urine in the pelves of the kidneys.

2. Case—the dissection of a male subject. The stomach and small intestines very much inflamed (we would say, injected); the liver pale, very much enlarged and soft; the gall-bladder partly filled with dark-green bile; no urine in the pelves of the kidneys; bladder very much contracted; nearly four ounces of water in the pericardium; and a small quantity of black blood in the abdominal aorta.

3. Case—dissection of a man subject. The mucous coat of the stomach and intestines were very much inflamed (injected, we suppose); the liver was paler than usual, and very large; the gall-bladder was distended with dark-green bile; the spleen quite small; the bladder contracted to the size of a walnut.

4. Post-mortem of a man. Mucous coat of the stomach and bowels very much inflamed (congested) throughout its whole extent; the gall-bladder nearly full of thick green bile; liver rather pale; bladder much contracted; black blood in the abdominal aorta. On opening the head, the veins of the dura mater were seen very much congested, and spots were interspersed through the substance of the cerebrum, and particularly in the cerebellum; a small effusion of water at the base of the brain. We deem these dissections sufficient to show the prevailing cast of pathological changes, so far as is really necessary for forming an opinion of the character of epidemic cholera as seen in Baltimore; and, we opine, in the main, these will be the prevailing appearances after the death of those who died in all places, differing somewhat in the detail in different seasons and different locations. We have already mentioned that we had an Hospital No. 3 in Baltimore in the year 1832. The pathological appearances were somewhat different from those from Hospitals No. 1 and No. 2; we shall therefore present them to the reader, that we may afford all possible information on this momentous subject.

DISSECTIONS AT HOSPITAL No. 3, BALTIMORE.

It is somewhat singular that Dr. Warner has given but one case of dissection; he offers it, however, as a specimen of seven-

teen cases which he dissected, and he precedes the post-mortem by the following remarks: "The following post-mortem examination of fourteen cases illustrates the morbid phenomena presented in seventeen cases; some little variations, indicative of old diseases, were occasionally detected, but do not appear to modify the present abnormal state. Catharine Bull, colored, aged twenty; post-mortem three hours after death; abdomen puffed up; the whole alimentary canal distended with flatus; the minute ramifications of the mesenteric veins distended with dark venous blood; mucous membrane of the *jejunum*, *ileum*, *and great intestine*, *blanched*, and containing a large quantity of rice-water fluid; mucous membrane of the duodenum softened in one spot, and considered, from the appearance of the surrounding parts, to be the result of an old intestinal affair; *gastric mucous membrane blanched*, with distinct congestion of the venous capillaries; stomach half filled with a dirty, blackish fluid, resembling the scrapings of the gutter; the hepatic and gastric plexuses of the sympathetic nerves were exposed, together with the splanchnic nerve, and presented a very unusual appearance, and at the same time so firm and hard as to resemble fiddle-strings. The most delicate fibres required considerable force to break them. Lungs blanched; heart-substance purple, and easily lacerated; the left ventricle filled with black grumous blood; the abdominal aorta, iliac, and all the large arteries filled with the same; gall-bladder half filled with healthy bile, and ducts pervious; urinary bladder firmly contracted, and mucous surface dry; not a drop of urine in the pelves of the kidneys, ureter, or bladder; when the ureter was pressed upon, a drop of yellow mucus was pressed out; brain of a livid cast, referred to venous congestion."

Believing, as we do, that the information obtained at Baltimore, in the epidemic of 1832, is important, as well on account of its amount, as in regard to the success and advantages of a cholera dispensary, we have thought proper to present all the circumstances connected with the visitation in view. So that we could not well pass over the reports from Hospital No. 3. There is a very remarkable discrepancy between the pathology of Dr. Warner and the gentlemen at Hospitals No. 1 and No.

2. We have, in copying Dr. Warner's report of his post-mortems, italicized what he says of blanching of the stomach and bowels; for we do not recollect seeing anything of the sort by the Baltimore physicians, and very few elsewhere. If it were a single case, we might pass it over; but it is a true specimen, according to our author, of seventeen cases.

Our reflections lead us to believe that we can explain the anomalous feature seen in the morbid appearances just noticed. "The tinct. guaiac. was freely used, and in no instance with benefit, while the most melancholy consequences attended its administration in several cases. I would direct your attention particularly to this article, as it is the most prominent ingredient in a vile nostrum widely circulated through our city." We cannot see why this notice is taken of a "vile nostrum," or why it should have been used in hospital practice; certain it is that the Board of Health had nothing to do with this article, neither did the consulting physician ever prescribe it or notice it. Our principal reason for noticing this article is to offer, as our opinion, that the tinct. of guaiacum and the tincture of assafœtida may have been the cause of the blanching of the mucous coat of the stomach and bowels, reported as constantly present in his post-mortems. Every one knows that these articles, when mixed with water, and of course on a wet surface, will give a milky whiteness, and if continued and repeated often for a day or two, we think would give the appearance of blanching, which no doubt would attend the use of vinegar, as we often see upon the lips of persons who have just been using it.

REVIEW OF DR. BERG'S REPORTS IN SWEDEN.

We have here an exceedingly well-written review of an able work, so far as the compilation is concerned; but, we think, the more is the pity, that so much zeal and talent should have been employed to bring before the public erroneous views to raise doubts on the causes of cholera, and to conduct those who are not prepared to judge for themselves into a labyrinth dark

and destructive. This being honestly our opinion of the production before us, we shall endeavor to examine the reports of Dr. Berg, and we hope to show to the inexperienced, that however captivating these reports, they are not to be relied on. Too often views and theories are espoused, and zeal becomes a blind conductor to hot pursuers after the *res fallacissima*, by which are brought forth deceptive responses.

The reviewer before us says: "We saw repeated instances where a previously healthy locality was infected by persons arriving from a distance, and from places where cholera then prevailed; we found that these individuals were sometimes apparently in good health when they arrived, or, perhaps, they already exhibited the premonitory symptoms of the malady; we met with them laboring under the disease in low lodging-houses, from which the disorder spread to other inmates of the same house or room, and we traced the malady from these lodging-houses to other localities, which, in their turn, became focuses of infection in previously healthy districts."

Let us admit all that is said in the above paragraph, and it proves nothing but the coincidence of the occurrences; persons were seen to arrive at a certain place which was then healthy, but who had just come from a place where cholera prevailed. At some indefinite time, cholera shows itself in the new-comer in some "low lodging-house." Let us suppose such an arrival, and that, in a short time, the visitor is seized with cholera; is it safe to conclude that there was any positive relation between the arrival of the person and the cause of the disease? Do we not see cholera, like some other epidemics, set in suddenly—in Columbia there was apparent health one day, the next day twenty-four deaths—so far as malignant cases are concerned? Are not the "low houses" and places the most common abodes for cholera? May we not as fairly infer that the stranger is as likely to take the disease as others in low houses, or it is a mere coincidence as to time, with the outbreak of the disease, as that because he had been somewhere where the disease prevailed, therefore he must have brought the fomes of the disease with him. It cannot be denied that one of the most strongly-marked characteristics of the epidemic cholera

is the prevalence of morbid derangement of the primary organs of digestion and nutrition. The atmosphere becomes a magazine of choleraic malaria. Individuals, living in this unwholesome magazine, are liable, upon transgressing in any of the non-naturals, to be seized by the malady, — the stranger comes to such locality, and it is fair to maintain that the fatigue, the change of water, food, loss of rest, perhaps anxiety, will render him more liable than those persons who have not been subject to anything unusual. But again, allusion is presently made by the reviewer to Travemunde and Lübec, said to have been infested by cholera, which was not prevailing at Malmö. It was found that when a stranger had sickened and died or recovered, in one of those "low lodging-houses," the "disorder spread to the other inmates of the same house or room, and we traced the malady from these lodging-houses to other localities." Mark, first, the loose phraseology, "the other inmates." Where were they, and how many? were they so numerous as to leave no necessity for greater precision? But, judging from choleraic epidemics *in extenso*, have we not as good a reason for supposing that all the inmates, and not less the stranger, were affected by the same cause, seeing as, we think, has been abundantly evident, that cholera does not only infest the atmosphere, but does literally sometimes ride on the whirlwind; for the choleraic poison being eliminated is now an integrant of the air, and perhaps comes with the zephyr of early morning or night. Thus, it is acknowledged, we believe, on all hands, that cholera can only prevail where there is malaria of some sort, and it is begging the question to say that because a person has come from an infected place, and he locates among persons in other locations, he has brought the disease, and yet we know the malady may be concocting, or in a state of incubation, in his new location. Seeing the poisoned inmates emerging from a location known to be favorable to the growth of cholera, who shall decide which of the parties first imbibed the poison? for we have seen that while there was repose and quiet and a full share of health existing in a certain place, the wind rose like a sirocco, and in one night scattered the seeds of cholera in a few houses, to the destruction, in fifteen days,

of about one hundred and fifty individuals, who could not possibly have been subjected to any of that ill-omened contagion that is said to come from one sick of cholera. We shall, in proper place, present to our readers such an instance as we have just noticed.

In great epidemics, we sometimes see large families seized one after another, just as we see in cholera; they are visited by neighbors; these, in their turn, are taken down in the same way, and it would be the easiest thing imaginable to trace cases from house to house, and, indeed, in years gone by, we have known persons to attempt to trace cases of intermittent and remittent fevers, just as contagionists of the present day attempt to trace epidemic cholera.

REMARKABLE EPIDEMIC IN 1804.

In the summer of 1804, a very extraordinary epidemic spread over the Middle States of our Union, which evidently was the product of things tangible. One of the most luxuriant springs and early summers in the vegetable kingdom was followed by hot dry weather later in the summer. Freshets of unusual magnitude piled the cut grasses of meadows over low lands, mixed with much alluvium; and the rank weeds, everywhere abounding, were seen rotting to an extent beyond what had ever been seen before or since. The lower portion of the atmosphere seemed to have undergone one universal ozonization. We have, in a former part of this work, alluded to the fact of there being so much blending of diseases, as exhibited by their symptoms, as to show that there is a necessity, in the investigation of them, for selecting those that are most strongly marked as *standards*, with which we must compare vagarious cases, otherwise it will often appear that several diseases are prevailing at the same time, and this has often been done by part of the profession.

We have a memorable instance of this in the yellow fever of 1793 in Philadelphia. A large portion of the profession con-

tended that yellow fever then prevailing was the result of imported contagion, and altogether different, in its whole character, from the remitting and intermitting fevers then prevailing in the city, and requiring a special treatment, and hundreds, perhaps thousands, died from this cause, owing to its leading to *mal apropos* treatment; but when Dr. Rush introduced a treatment suited to miasmatic disease, the devastating plague succumbed, proving incontestably that there was one cause and one order of disease, however modified, in the family group.

In the year 1854, yellow fever and cholera were seen to prevail together at New Orleans. The former disease is indigenous in that city, and, of course, its specific cause exists at certain seasons at all times in more or less force. But the *choleraic constitution*, or if more modernized, a *new cycle* of atmospherical influence now prevails universally, and even this domiciliated hydra (yellow fever) bows before the monarch of the new cycle of malarious rule. For this reason, with slight modification, the treatment in the late epidemic at New Orleans ought to have been suited mainly to the cure of cholera,—if, indeed, we had any reliable curatives: this we have in cholerine.

This seeming digression will, we hope, be excused, since, if we are correct in our views, it will follow that if diseases of one order are thus diversified, the much-abused contagion is but a phantom, as relates to yellow fever epidemics, more purely miasmatic epidemics, or choleraic epidemics, and perhaps others; and we think it cannot be too much insisted on, among fundamental truths, that it is not more clearly a truism that "disease is ever a war with nature," than that morbific cycles always prevail to control our maladies, and, as the term imports, changes come, giving to our diseases now a sthenic, and anon the asthenic character, associated with morbid specialities. And, although shrouded in various sorts of disguise, yet are the phenomena manifested to a careful observer, sufficient to give light enough to lead us into pavilions where are to be found many responsive oracles, that will disclose to us knowledge which will lead us to a right understanding of specific diseases, which are generally epidemic, and direct us in an efficient treatment.

We think it truly important to enforce the opinion, that every specific disease, while it presents what we term *standard* cases, or cases that are *pure in kind*, in all epidemics there will be seen cases contemporaneous with maladies that are more or less variant from the *true standard*. Of the truth of this opinion, we have a striking instance in the miasmatic epidemic of 1804. We have shown that the *land* was filled with the material which has long been supposed to produce remitting and intermitting bilious fevers. It was not more manifest that that epidemic was the product of miasm than that the disease wore a sameness which grew out of the strength and purity in kind of the poison then infecting the atmosphere. This was manifested and confirmed by the sameness, simplicity, and success of the treatment then adopted. It was treated with great success by the free use of jalap and calomel, and the cinchona bark (the quinia not being known), with now and then the employment of bloodletting. Remittents after free purgation, and sometimes an emetic, and, in the more robust patients, occasionally venesection; the bark would arrest remitting fevers as certainly as it did the intermitting, but the former required more time to arrest the fever, while the latter was more prone to relapses.

But, to return to our reviewer. "We have met with cases, too, *which inclined us to believe* that cholera could not only be transported by the persons, but likewise by the clothes and bedding of those laboring under the disease; and, on some occasions, the clothes, &c., were carried to considerable distances before being opened out or used, yet they, too, *seemed capable* of spreading the disease." Could anything easily be more vaguely expressed? To prove one of the most important concerns in which the whole world is deeply interested, and while thousands of things on record are directly at variance, the reviewer hazards the vague expression, "which *inclined us to believe* that cholera could be transported." And again, after speaking of the opening of clothes that had been carried a considerable distance, "they, too, *seemed* capable of spreading the disorder." Could anything be more vague than this? These opinions are suppositions. But, let us admit the finding of all the evidence

claimed in these declarations, and they prove nothing but coincidence of the occurrences; for nothing is better known respecting cholera than that its real outbreaks come suddenly; nothing can account for its widespread action—showing itself now here, now there—but a diffusion of choleraic malaria, widespread as is the showing of its ugly features.

The reader may recollect that we have been endeavoring elsewhere to prove, that a choleraic atmospherical cycle has existed over greater part of the United States for more than twenty years past; and, indeed, over the inhabited world; and we wish to express as our opinion, that this cycle will, like others that have preceded it, pass away, and give place to something different. It may be similar to what we have seen, or it may be something new. Owing to the universality of the cause, we cannot safely decide, that because a person came from a place where cholera visibly existed, and is overtaken with the disease, or even if he comes with the disease upon him, and others are seen soon afterwards affected with it, that such person brought the seeds of the malady. Such a conclusion would be to deny its epidemic character, for here the grand question to be decided is, is the choleraic malaria endowed with the attribute of ubiquity? We think this is a truth too clearly manifested to be doubted; the course of trade cannot account for the irregular periodic recurrence of the disease over the great expanse to which it is spread; and surely, whatever is its cause in one place, is its cause in all places. Besides, the shortness of its duration, in all places, proves incontestably that contagion, of animal origin, cannot rule epidemic cholera, for the disease having shown itself for a short period, suddenly disappears—what can possibly become of the contagion?

Dr. Carlton assumes the position, that "no complete report of the progress of cholera through any of the great kingdoms of Europe has as yet appeared." We leave the reader here to judge of this assumption, and proceed to notice another assumption which we cannot see through, as the reviewer seems to do. "No exertion seems to have been spared to render the history of the pestilence complete; and the whole of the reports are investigated by Dr. Berg, in a spirit of candor and

impartiality which imparts additional value to the facts that they contain." We may well ask here, wherein, or in what, can we see this spirit of candor and impartiality? The subject treated by Dr. Berg is matter of fact, requiring no adornment but truth; and it may be said, that truth is "best adorned when adorned the least."

We are told that, "The sanitary state of those provinces that escaped altogether is likewise recorded, and the comparative spread of the malady in 1834 is briefly noticed." This paragraph is intended to support the opinion that the provinces which escaped altogether owed that exemption from cholera to the absence of a specific animal poison not coming into contact with the people of the interior districts. We might ask the reviewer here, how many travellers does it take to carry a portion of choleraic poison from one place to another? But desolate must be the interior town or district that has no intercourse with any of the sea-ports of their country while cholera was destroying their countrymen, and strange would be the case, if none of these inland people had relatives in the cities, towns, and districts located on the sea-coasts. Our author and our reviewer hold the notion that a single batch of this pollen-like poison will originate a disease of epidemic character.

We might as well expect a blind man to find the different squares of a chess-board, as to find any direct or reliable movements, so to speak, of cholera in this country. It is seen east, west, north, and south, but with exemptions here and there that would bear a comparison with the checkering of the chess-board. Whether we look to the severity or the extent of the disease, or appearance as to time, it is as undefined as the moves on the chess-board. We may see cities, towns, or districts where other diseases prevail simultaneously with cholera; and in some cases it is not easy to decide to which of the diseases we shall refer such cases in their incipiency; but, to our apprehension, they are modifications of one malady, as seen in the form of cholera and yellow fever in New Orleans, in 1854. Whatever mystery may hang about the disease, one thing, in this country, is absolutely certain: the immense travel in the United States does not control the epidemic cholera of which

we are treating; nay, more, we may justly say, that while our multiform enterprises and unequalled travelling afford opportunity to judge of this matter, the benighted and semi-vassalage condition of Sweden lessens the risk of spreading, as the phrase is, of epidemic cholera. Of Sweden, in this respect, we shall have something to say hereafter.

"Quarantine on vessels arriving from infected ports seems to have been pretty rigidly enforced at all or nearly all the quarantine stations along the coast; instances occurred of vessels arriving with cholera on board, but by strict seclusion from intercourse with the shore, the disease was in almost all instances arrested." Dr. Carlton elsewhere says no amount of seclusion can exclude cholera. This *ipse dixit* manner of disposing of so momentous a subject cannot be admitted. In courts of law, it is required that a witness shall depose to the truth, the whole truth, and nothing but the truth. Can we agree to anything that is less positive than this oath, in the matter before us? What would a judge say to a witness who would say, it "seems" so. Again, "at all or nearly all the quarantine stations." Is this declaration sufficiently positive in so grave a question as is here under consideration? "By strict seclusion from the shore, the disease was in almost all instances arrested." Does this prove anything? If the vigilance was the same in different places, the result ought to have been the same. But even waiving the ubiquitariness of the cause of epidemic cholera, the number of correlative circumstances are so numerous, that we cannot safely draw conclusions without extending our observations to a wider range than Sweden affords; and if no similar uniformity of case after case can be traced to contagion, in other countries, similar to the catenation reported by Dr. Berg, we are bound to observe great caution how we adopt his reports. We do not mean to charge wilful misrepresentation; but we do believe, that the field for observation is beset with so much diversity of things, that two observers setting out to report those things, the one intent on proving the cholera to be contagious, and the other that it is not contagious, they will generally disagree in their reports. In extended observations, most information must be

collected through different individuals. These, too often, will suit the reports or alleged facts, to meet the views of those to whom they communicate.

It is clearly manifested by the widely-extended reports before us, that our author reports the reports of others, and it is but reasonable to suppose that all of those reports came from contagionists; and what medical reader has not seen such instances of erroneous reports of the contagion of yellow fever, being conveyed from place to place, by which it spread in the latter, and yet a more cautious investigation has proved conclusively that the disease was indigenous? In such instances, the disease (in the present comparison) was endemic in the one case, while in the other it is epidemic, in the most extended sense of the term, and neither low streets, "salt herrings, sour bread, or sourer milk," are necessary for the origination of a contagious disease, as we see in small-pox. These things have existed in Sweden for ages, but the epidemic cholera had its origin, as we are informed, in 1834. We have elsewhere explained our views of the predisponent cause, and of its immediate exciting cause.

"The boat arrived at Malmö on the 27th of July, and two custom-house officers, who had kept watch on board during the stay of the steamer in the harbor, were seized with cholera, and died. We doubt much, however, if the infection in this case can be traced to the stay of these men on board the steamer, for they were not attacked with cholera till the 14th and 16th of August respectively." If there was room for doubt, why did the reviewer notice the cases? But "the disease had already occurred in the dwelling of the custom-house officer, Jacobson, on the 11th of August," and several others in the family died, in quick succession. The disease is supposed to have passed from the house of Jacobson to that of J. Hansson, also a custom-house officer. We are not told what steamer or vessel brought the cholera to Jacobson's house. We are not sufficiently well assured that the disease had not been seen anywhere else in the town; but even if it had not been, the instances mentioned prove nothing but coincidence

of occurrence, and the reviewer admits that "the disease in Malmö, as elsewhere, was chiefly confined to the most wretched and insalubrious parts of the town, and especially in a low-lying quarter called 'Bethlehem,' inhabited by the laboring classes, and adjoining two swamps, with a filthy ditch running through them, filled with stagnant water." In this quarter, the mortality was 80 per cent., and from eight to nineteen cases occurred in single houses or tenements. Small-pox is a disease manifestly contagious, but we see it modified in grade by the habit of body of those whom it attacks, as was so clearly seen years ago, when we dieted before inoculation. But stagnant water in ditches, and low grounds, are not inlets to that disease. Why, then, shall we look to these places for cholera? If there be contagion, it must be a unit, and produces its likeness, irrespective of mud and mire, for these are no novelties. Then, in respect to many cases occurring in the same house;—this is no more than what we see in common epidemic fevers, a remarkable instance of which we have already noticed in this work (in 1804). We admit that cholera prevails principally in malarious places or districts; but these *we always have with us*, while cholera appears in every country, where there was no contagion, *neither could be*, as manifestly as that vegetation rises from the earth.

Speaking of an outbreak of cholera, about the 12th and 13th of August, the reviewer says: "The mode in which the malady was introduced does not seem to have been satisfactorily ascertained. A suspicious case occurred in the person of a teacher of languages, named Nordlin, as early as the 3d of August, but the first instance when the disease was pronounced to be cholera, was observed in the person of a female, Maria Jönson, who had attended Nordlin in his illness; and two or three days after (August 6th), was seized with well-marked cholera." Here is a confession that the mode of introduction was not *satisfactorily ascertained*, and a true case of cholera is derived from it, without any mode of introduction being shown of the infection. Shall we call this a case of spontaneous origin. "A suspicious case occurred." How suspicious? because there was no proof of contagion or infection? Never-

theless, the case was decided to be unquestionably cholera, and was pronounced so to be from the symptoms, while hundreds of cases were pronounced cholera, because, while an epidemic disease existed, and a ship arrived from a place where the disease prevailed, whether cholera was on board or not, if persons visited the ship, and were seized with the malady soon afterwards, the medical observers of Sweden put these cases down as coming from the ship; but we view the whole affair as matter of opinion, and those observers admit, that the co-operation of a malarious neighborhood is required to spread the disease around.

It is said that "Malmö contains 12,981 inhabitants; of these 378 died out of 1,138 cases of cholera in twelve weeks;" and it is supposed by Dr. Berg that all the evil arose from an infectious matter brought from Lübec by some two or three cases, and the *suspicious* case of Nordlin. This infection had power to spread for twelve weeks; but, notwithstanding the presence of nearly twelve thousand people remaining in the town, the poison ceased to act any longer. What became of the infection? Shall we suppose that the few individuals who are said to have caught the cholera in Malmö, and carried it to the country and to adjacent towns, lessened the force of the infection, and thus relieved the people of the town? We think such a supposition would be as rational as to suppose that an infection could act twelve weeks, and then disappear suddenly.

"Dr. Stenkula even maintains that the disease can be conveyed by individuals who themselves escape, and instances a case in Raa, where two children took the disorder from their father, after his return from Malmö, while the latter never exhibited any symptoms of the disease." This wonderful bit of fancy is endorsed by our author and reviewer. We would suppose a man must be a confirmed contagionist before he could adopt such a flimsy notion, the more so, because he soon afterwards saw the widely-opened box of Pandora at Malmö, and poison poured forth with power to attach itself to the skirt of every man's coat, and to the habiliments of the women and children, suddenly lose its power, and close down the lid of the pestilential box. It is but reasonable to conclude that Dr.

Stenkula could not trace the disease of the two children to a more satisfactory source, and it is equally clear for us to see that there was a more general cause present at Raa, and one more satisfactory; for we have seen hundreds of cases in which no possible stretch of the imagination could trace to personal infection. With observers as imaginative as Dr. Stenkula shows himself to be, our author might easily be satisfied with his own imaginative reports.

"We observe, too, in the report given by Dr. Gräh, that out of those employed about the sick, many were attacked with cholera. Out of three physicians, two died; of eight male attendants thus affected, five were carried off, as were likewise five nurses out of nine who suffered from cholera." It will not be thought remarkable that two physicians, five females, and five male nurses, should have died out of 1,138 cases of cholera, of which 378 died, when we consider the greater fatigue and loss of sleep, anxiety, change of diet, and change of occupation, with many nurses; we may well insist that the proportion of cases is not greater than we might look for, nor does there seem to be greater proportional mortality than seems reasonable, when we consider the increased labor of those people, and particularly the physicians: in the present relation, physicians are as other people.

"The principal mortality occurred during the first three weeks; but it diminished when better sanitary measures were adopted in the hospital." This is a feature universally characteristic of cholera, and we are warranted in believing that those sanitary measures had nothing to do with the abatement of the epidemic. No account of those sanitary measures is given by the reviewer; but we could not well imagine what those measures could have been. Patients must necessarily come in and go out; and if the infection can be carried in the apparel, as is alleged by the reviewer, how can the inmates avoid carrying it abroad? As the disease, as usual, was principally among the poor, we may suppose that many people were passed through the hospital. How can we, with any semblance of reason, believe that, notwithstanding the infectious nature of cholera, people are brought to one great focus, so to speak,

and again dispersed, and return to the people, and not spread the disease; nay, while the focus is generating infection for the imbibition of the miserable clothes which the poor of the Swedes generally wear, we are told the disease soon diminished. We see nothing here that does not obtain in almost every outbreak of epidemic cholera.

"At the farm of Zagarp, half a Swedish mile N.N.E. of Malmö, a servant of the name of Nils Perhsson was seized with cholera, on the 4th of September, after having been in Malmö on the preceding day. This man recovered, as did also his friend, Nils Hansson, who had not been in Malmö, but had sat some time with Perhsson on the day of his return from the town, and who was likewise seized with the disorder the next day." We do not doubt as to the facts in these cases; but the conclusions are unworthy of a philosophic physician, and manifest a degree of credulity and prejudice truly remarkable. We will suppose that Perhsson came in contact with the choleraic infection, that this infection generated a deadly disease the day after its reception, and either by a portion adhering to his clothing, or transpiration through the skin, or expiration from the lungs, he poisoned his friend Hansson; is there anything analogous known to occur in any epidemic? and we say least of all in epidemic cholera: a poison so transmissible, as is here admitted, would depopulate every city in which it appears. The next case noticed was that of "Hans Tufveson." In this case the disease is said to have occurred on the 8th day after exposure at Malmö. We would remark here that all *specific diseases* are the product of *specific causes*, and this is the character of all epidemics, and the period of incubation is as regular as is the disease. In small-pox this is clearly manifested. Has an individual been exposed to the effluvium, or the variolous matter applied to the skin in a state of abrasion, we look for febrile action on the fourth day; there are exceptions, but the uniformity of the thing is almost without exception. When general inoculation was practised, we have gone through scores of cases, and on the same day found that the inoculation had failed, or was equally advanced in the course of the disease in all the cases.

"In almost all cases, the houses where such patients died were carefully secluded, and the disease did not spread further." "Patients carefully secluded,"—how is this to be effected? There must be a physician, a nurse, and, in a Christian land, there will be some friends; medicines must be sent for; the body must be buried: how are all these attendants to escape, seeing that a poison is generated and transferred, in some cases, as is said to have been the case between Perhsson and Hansson; the latter took the cholera the day after sitting with the former, and, it is said, he was thus infected? Who can measure the savage treatment which most patients will receive under the notion that infection can be warded off by the neglect and seclusion of the sick? We have an ugly specimen of this savagism in the instance of a man who came from Malmö, and lay in the bed of his brother-in-law, Anderson, and being sick, was driven off "by the authorities, and died on his way home, which was at Malmö, upwards of four English miles." Superstition is a hard master, as we here see, or this sick man would have been carried home; for what we know, he died by the wayside, without help, for he did not reach home; but, "on the way, the symptoms became more and more [as well they might under his circumstances] developed, and he expired that evening." On the 27th of August [this man, whose name is not given], the brother-in-law of one Anderson, came from Malmö; "and Anderson, in whose bed he lay a little while, sickened on the 30th," that is, three medical days from the hour at which Anderson was exposed till the hour on which he sickened on the 30th. We have had good opportunity for observation, and as the disease has appeared under our notice, and also as we read of it in nearly all of our cities and towns, &c., we are fully confirmed in the opinion that cholera fomes is but a weak and slow poison, operating gradually in most cases, perhaps in all, and it insidiously disturbs the vital economy, and then, sooner or later, becomes an agent of sudden destruction. Hence it is, that we see thousands of cases of milder grade in the form mostly of cholerine and cholero-dysentery, and we have already noticed the circumstance of its most generally (in this country) usurping the place of our summer fevers.

The reviewer introduces the name of Dr. Stenkula as authority for the following observations: "As regards the contagious or non-contagious character of the disease, I have no hesitation in declaring, in opposition to the generality of the more recent authorities on the subject, that the cholera is essentially a *miasmatic contagious disease.* It is true that here, as everywhere else in Sweden, diarrhœa, and vomiting, and gastric disorders had occurred; but the appearance of this malady in a locality so healthy as Raa, introduced, as it certainly appears to have been, by communication with an already infected locality, is a fact so well established that it cannot be disposed of."

We are told that cholera is "a miasmatic contagious disorder." That in Raa, as everywhere in Sweden, diarrhœa, vomiting, and gastric disorders had occurred; and yet, it is said the disorder must have been originated by a communication with an already infected locality, and introduced by contagion. Now, what are we to think of the assertion that the infection was brought to Raa personally, or by the clothing of individuals? We must infer from what is said that Raa was too pure a location to engender or maintain miasm; and this, it is admitted by Dr. Stenkula, is the pabulum upon which choleraic infection subsists. This is a most important admission of Dr. Stenkula, that those harbingers of cholera did exist not only in Raa, but throughout Sweden, i. e., disorders of the primæ viæ.

The reviewer introduces the authority of Dr. Stenkula again, and says: "He, however, fully agrees with the London and Christiana reports, in believing that all seclusion of healthy districts is unnecessary, save as respects ships arriving from infected ports. The advantage, however, of shutting up and watching the houses in which the disease may have broken out, and of subjecting the inmates of such houses to close observation and seclusion for a time, he thinks cannot be denied."

Dr. Stenkula, whose views are endorsed by Dr. Carlton, has expressed as his opinion, that healthy localities need not be watched, except the ships which arrive from places where the cholera prevails, and yet he declares the cholera to be a *conta-*

gious miasmatic disorder; therefore miasm must be a *sine qua non* in the production of the disease. Is miasm transportable? Here we see Dr. Stenkula differing with Dr. Ström, whose opinion respecting prevention is adopted by Dr. Berg and Dr. Carlton. Dr. Ström ascribes the escape of the people of the city of Lund from cholera to an enormous sanitary cordon, consisting of seven or eight hundred persons, who perambulated the purlieus of Lund day and night; and, it is said, "the disease seems to have reached within half a Swedish mile on two sides, but no case of cholera occurred within the city."

Verily, here is one of the greatest farces ever acted—for magnitude, for the zeal, and ignorance, and savagism of the actors, it was never equalled. We would ask where were the Christian virtues? where were "the bowels of compassion?" where was the common sense of the authorities of Lund, that they could send the hordes of superstitious people, to violate the first command of God, to love thy neighbor? All this done under a dark cloud, in which might have been seen a fearful responsibility of the movers of the scene; for, in Sweden the people are a mass of down-trodden automatons; truly docile, and less depraved than the people of any other country in Europe. Had there been a well-marked affiliation of the atmospherical and local topical causes of cholera at Lund, while this enormous farce was acting, the people who were the actors would have been "led like sheep to the slaughter"—a fearful responsibility would have rested upon the projectors of the experiment, for the exposure of the people to the anxiety, loss of rest and sleep, &c., would have greatly augmented the predisposition to cholera, and increased the number of cases, and the mortality.

"In Götheberg, as elsewhere, the disease prevailed chiefly in the poorest and the most densely populated quarters of the town, and the intemperate were its first victims, but at a later period even those of more orderly lives did not escape." This has been, to say the least, strongly characteristic of epidemic cholera in all countries; and is as steady a trait of its character as any other circumstance: may we not ascribe this to more time being required, in pure habits, to impress the system?

"In a town of such great commercial activity, and situated on the great highway from Western Europe to Stockholm, and the east of Sweden, no measures of seclusion or quarantine could be adequately enforced." That there could not be any adequate means applied to seclude epidemic cholera admits of no doubt. This being the state of the case, all attempts at seclusion in large towns would be folly, for even if it were infectious it could not be kept out; but, the frequent exemption of large towns while cholera exists at other towns, both large and small, not far off, affords strong grounds for believing that there is no transferable quality in the exciting cause of cholera, for it is a thing which does not follow the course of the winds—we need not multiply instances, for they are too common to require it; but, we speak here in reference to great or prevailing winds—we will, hereafter, refer to a preceding part of this work where Dr. Frické assures us that the course of the wind was opposite to that of the course of the cholera at Hamburg (1831), but, wherever the parasitic cause rises in a body, the winds prevailing in a course from this nidus to the streets of a town, an invasion takes place, and more or less victims falling before it, the disease, in its malignant form, will cease sometimes in a few days; and almost never lasts in its malignant form more than a few weeks as an epidemic—how can we reconcile ourselves to this condition of things, seeing as we do, that this obtains in all cases alike, i. e., whether there be quarantine, sanitary cordons, or watchers, or scarecrows.

It may be truly averred that, wherever the epidemic has appeared in different countries, more or less of the towns, or districts, are exempted, and, we believe, it is a law governing epidemic cholera, that as the malady shall appear more or less malignant in some locations, so will be the greater number of exemptions in places around.

"The interruption of trade by a strict quarantine, and the consequent loss of employment to thousands of the working classes, would have brought them to the brink of starvation, and would have rendered them ready victims to the pestilence, which sooner or later would have made its way into the city

with the great crowd of travellers that could not be arrested or turned aside." We have here an implied admission that quarantine would have subjected the people of the town to vastly increased evils, not only as relates to subsistence, but by an increase of the disease, and, the infection could not have been kept out. Before we close this review of the Swedish reports, we shall have something to say respecting the boasted commerce, and some other things in Götheborg.

"In Thorsby parish, Anna Johannisdotter (aged 24), slept one night in Götheborg, in a bed from which the body of one of her relatives who had died of cholera had just been removed. On the following day (November 3d,) she was attacked with cholera on her way home, and died on the 6th." What shall we say to an announcement so wonderfully absurd, as is here presented. How shall we conceive of an invisible infection, lodged upon a bed by one sick of cholera, that is so deleterious that it will invade another body in health, and show itself in the second person in deadly strife, in twenty-four hours, or perhaps less, since we see that this woman sickened on "the following day" after exposure to the elfish infection.

The people of Thorsby are sneered at by the reviewer for their want of common sense—as we see in the following words: "That the disease would spread no farther than God permitted, and that all seclusion was unavailing." Has not the reviewer admitted that, in great commercial towns no quarantine or seclusion would keep the disease from entering, for that was the case with Götheborg? How can we expect anything better at Thorsby, or elsewhere, except in greater degree in one place than in the other? All the circumstances are the same, except in degree. And, however much the medical observers, concerned in the cholera reports, may laugh at the Thorsby decision, we are decidedly of the opinion that nothing has been said in those reports which shows more wisdom than that the disease would only spread as far as God would permit. We have here a case in which there is a universal contamination of the atmosphere, and the co-operation of some sort of malaria is necessary to give play to the choleraic influence; how else are we to look for the spread of the disease

about "the ditches at Malmö, and the low, filthy places there?" Well, if this be admitted, the disease will not spread without the proper medium, through which the specific infection operates.

And here we have cause for gratitude to that Providence which in the main works for our good; and we find that in doing the duty of Christians towards each other, or doing as we would wish to be done by, that we shall contribute best to the general safety, and to our own. Let the actors of such scenes as turning the sick out of doors, driving them off because they have been where there was a desolating sickness, beware. Shall we shut up patients in houses to smother, lest the elfs shall ride upon the air, and disseminate poison upon those that would do kind offices to the sick? It is truly consoling that, notwithstanding the pretensions of the Swedish authorities before us, the mortality in 1850 was as great—we think greater—and its duration quite as long in its several locations, as in the United States, where no attention whatever has been paid to seclusive measures; so that, we may well say, attend to the purification of the atmosphere, and control the people in habits of temperance and regularity of living, so far as in our power, and we may rely upon it that Providence will speed our measures, and God himself accept our kind offices to our fellow-creatures. We "speak of the things that we have seen," and not as one who offers secondhanded reports. We by no means advocate blind fatality. But cholera, though protean in its nature, has its laws, and the first great law is the universality of its cause, which makes manifestation of its existence in a peculiar infestation of a settled constitution, which is properly designated by the epithet cycle, and this cycle has operated in our country sporadically, endemically, and epidemically for upwards of twenty years, by reason of its ubiquitariousness. How vain then to strive against the air we breathe! All attempts at seclusion but begets a false confidence, for the choleraic principle has dominion over the face of the ground, and while it banishes many other diseases from the general soil, which are the product of malarious materials, takes precedence, and you may as well attempt to arrest the high-soaring

eagle in his flight, as to arrest the cause of epidemic cholera, for, it is, so to speak, out of sight, out of reach, out of any morbific categoric of disorders, for, it is not of itself a tangible cause of sickness, but a ruling principle. We see electricity and other grand principles operating throughout space, and yet have we no conception of their nature. Electricity acts upon matter universally; and so with the choleraic principle, it is seen now here, anon elsewhere; it rules as a principle, and seems to commingle with a malarious material; for, keep away a certain malaria, according to Swedish doctrine, and we have no cholera; so, on the other hand, since the existence of the choleraic principle, let this malarious material accumulate, and we have cholera. If this were not a true explanation of our subject, why was it that miasm has been seen so long to produce certain diseases; but now domiciliates a new disease, and that disease the offspring of a new principle, well entitled to what has been termed a new cycle in our atmosphere, or the æriform constitution of Sydenham.

"When the sudden change from oppressively hot to cold and windy weather took place in August, 1850, diarrhœa and colicky pains in the bowels became frequent, but these diminished remarkably before the first cases of cholera appeared, about the 22d of September." We have already noticed what Dr. Stenkula (who is considered good authority), has said, that at Raa, as well as in every other place in Sweden where cholera appeared, it was preceded by diarrhœa, vomiting, and gastric affections. Now, as this obtains almost everywhere else, we may insist upon that condition as being allied with epidemic cholera, and the acknowledgment of the same state of things at Götheborg in August, at which time these affections must have been quite prevalent, since "they *diminished remarkably*" before the cholera appeared—does not this strongly resemble a quibble? What gave rise to those intestinal affections? Had the atmosphere anything to do with it? Had the atmosphere entirely changed its character in a few days? Does not a philosophical examination of this subject afford the conclusion that the diseases of that season, being seated in the same viscera, and, beginning

mildly, and gaining strength as the season advanced, that the whole was the product of one unwholesome atmosphere? This is nothing remarkable that there should be an interval, for we see that the cholera in its malignant stage, after prevailing one, two, or three weeks, almost always becomes milder, and soon ceases altogether. Why does it cease till it has produced utter desolation if there be an infection so potent that it attaches to clothing and bedding, and has the quality of infecting persons who come near in the open air? and it is alleged by the authorities before us, that the infection may be carried to a distance, and will act at an indefinite time.

Our observers obviously turn to the supposed interregnum of the cholera at Götheborg in 1850, with a view of strengthening their position in relation to the disease having been originated by imported or transported contagion, and we are told that the disease first made its appearance among the shipping and boatmen. We say, well it might; for this is the place to look for malaria, without which cholera seldom exists epidemically. We see the disease sprouting gradually in Götheborg, as it does in all places where it acts extensively. In August, it "diminished remarkably" (but not entirely); the same influences were seen to be at work, and soon attained greater force; for those diseases not seemingly cholera in the eyes of the contagionist, were positively the disease itself, yet in the stage of cholerine and cholero-dysentery; and now, in the primary stage of the epidemic, was the time for increased vigilance in efforts for out-door purification, and to restrain the people from all excitement, to moderate their labors and food, if plentiful, and improve it if too mean; in a word, a well-measured observance of the non-naturals, and scrupulous exactitude in applying early for medical treatment; for, like many other things, when taken in the bud, the disease can be treated with great success, i. e., there is a point when the system is on the verge of being fatally impressed, when the disease will yield in much greater degree than is generally believed. There is a period when, in most subjects, there is a state of *oppression* too often mistaken for *depression*, so that the disease, as we have seen it at this very point, is to be treated actively by depletory remedies, as

we have already shown, and shall still further illustrate and tell of the means.

"At the mouth of the Götha Elv, the great channel of water communication across Sweden to Stockholm, lies the large town of Götheborg,—a considerable town at least for Sweden, for it contains 21,000 inhabitants. In 1834, this busy trading and manufacturing town was most severely visited by the pestilence, which carried off 1700 of the inhabitants."* Such a mortality, as is here reported, evinces but little skill in the treatment of the disorder; and it would be well for the physicians of Sweden, and contagionists everywhere, to turn their attention and their talents to the cure of the malady, rather than pursue an *ignis fatuus* in the search after contagion; for our reviewer acknowledges that no measures of quarantine or seclusion can exclude the epidemic cholera from large towns.

"The trade of Gotheborg, and the vast internal trade towards; and to Stockholm," leads us to digress, for a brief space, to say something respecting the town of Götheborg as we saw it in 1830. It was reputed to contain 20,000 inhabitants; but in every aspect unlike, as we thought, anything of commercial or manufacturing importance. In passing the vast warehouses of the famous English East India Company, in a state of neglect and dilapidation, one was forcibly reminded of the uncertainty of the things of this world; that colossal scheme, and the damning iniquities and cruelties which thence arose, are still portentous of things that were and will be; for the forlorn condition of the capacious buildings before us are but a particle in the world-wide branches of that once opulent company.

No people can prosper in the cities, towns, or manufactories, under the present laws of Sweden; they are in a state of semi-vassalage, with laws subversive of enterprise. The females are degraded, and compelled, in good degree, to dress according to rank,—common women are not allowed to wear bonnets, and are kept altogether as menials. In passing through a public part of the city, we saw two men at work in erecting what was said to be a public bath-house; two bricklayers were at work

* In Baltimore, with a population of over 150,000, we lost 853 in 1832, and nearly all of the *baser sort.*

on the second story, and they had a woman as their hod-carrier. She was a good-looking woman, being somewhat stout, as is very common in Sweden. She was dressed, in October, in a petticoat of exceeding coarse linen, and a chemise not much finer; like a man, she took a great load of mortar or bricks in a large hod, and walked with it up a ladder.

Our letters led us to the acquaintance of Alexander Barkly, Esq., a Scotch gentleman, who had acquired a large fortune, and stood at the head of society, and at his house we dined with Dr. Dod, quite an old gentleman, who was the oldest Baron in Sweden, and was, therefore, by the laws of that kingdom, ex officio king, in the event of the demise of the king without a legal heir to the crown. Such an introduction and acquaintance led to the best hotel in the city, with wife and daughter. This was said to be the best by our friends, and though we were comfortably provided for, in whatever aspect we might view it, the house was not superior to what might be called a fourth class hotel in the United States, or a good country tavern.

We thought everything about the city had a forlorn appearance, nothing wearing the appearance of activity or enterprise. We were informed that there was but one apothecary in the town, and he had acquired a large fortune, as well he might, as no one could rival him, he being exclusively privileged. We called to procure ten grains of calomel; not liking its appearance, we made some remark, and the young man in the shop assured us it was perfectly pure, having been make after the process of Scheele—that is, by precipitation instead of sublimation. It was taken by the daughter of the present writer; having swallowed it hastily, she exclaimed in agony, that she had swallowed corrosive sublimate (the article not having been properly edulcorated), that it was burning her violently: eggs were procured as speedily as possible; but there being less than half a dozen in the house, we had to resort to two or three tumblerfuls of raw flour and water, after using the white of the eggs, before the burning sensation was relieved. A want of the proper antidote (albumen) to the bichloride of mercury, would probably have been attended with much danger. Ar-

rangements had been made, through our friends, for us to visit the domicil of a Baron, whose name we do not recollect, but who resided six miles from Götheborg, and we were informed that, in our passage there, we should have to pass under the iron cage, in which a man had been gibbeted, and now exhibited his crumbling skeleton—a cruel scarecrow to evil-doers in the kingdom of Sweden.

Were we a resident of Sweden, and afraid of choleraic contagion, we should be almost as much afraid of the diffusion of contagion by the currency as by the wearing apparel of the inhabitants—both are of bad quality. The currency of Götheborg, when we were there, consisted almost entirely of small tickets, of which there are two kinds: one purporting to be so much *specie*, and the other so much *current*, between them there is a small fraction; but so familiar are the shopkeepers and servant girls of hotels that they will tell you, with surprising quickness, that your bill is so much specie or so much current, meaning, in both cases, paper money. These tokens for money pass readily, so long as the value of it may be seen at one point, however dirty or ragged: to show their abundance, we will state a small occurrence. Having occasion for twenty dollars, we applied to the captain with whom we were to sail for New York for a loan; turning down his hat, he emptied what must have half filled a high-crowned hat; he remarked, that if we would take the trouble to count it (he being on his way to his ship), it was at our service. After looking at it, there being, perhaps, upwards of fifty pieces (a little way through), we perceived that the whole would not amount to one-fourth of what we wanted; here were notes of the value of two schillings (the schilling about equivalent to the English penny), and upwards, on a very small scale. The tokens are printed on very small strips of rough foolscap paper, with the most common Roman type, and could be counterfeited so easily that they would not serve as a currency in any country in Christendom except Sweden. We had provided ourselves with $100 Swedish notes at Copenhagen, printed on tissue paper quarto size.

We were informed while there that the town contained

20,000 inhabitants;—we were forthwith honored with the freedom of the city, through the influence of Captain Dunbar, who was then an old trader between New Bedford, Massachusetts, and Götheborg.

We did not make it specially our business to look for medical men, but we heard of none but two, Dr. Lambert and Dr. Westring, both of whom we understood were Germans,—the latter had charge of a considerable hospital, and the former was the Port Physician,—both gentlemen of good acquirements: they were attentive to us as a stranger. Far be it from us to underrate. Götheborg is the principal commercial city of Sweden; but when we look at the seeming boasting of the reports that the business is so great that the diffusion of choleraic infection cannot be restrained, owing to the activity of business, we say, there is here unfair exaggeration; compared with our principal cities, the difference is as that between the giant and the pigmy, and we find nothing relating to our cities and epidemic cholera that is not utterly at variance with the Götheborg reports, as portrayed by Dr. Berg.

Having disposed of our observations respecting Götheborg, we hope the reader will excuse us for a little further digression, while we speak of a few other things which we saw in Sweden, believing that what we have to say is not altogether irrelevant to the condition of that country in regard to epidemics. In entering Sweden, we crossed the Sound at Elsinore, and landed at Hellsingborg. When we landed, a custom-house officer came down to the boat, from a wharf in a miserable state of dilapidation, to demand our passport, which, in Germany, Denmark, and Sweden, as far as we saw, was termed a *pass*. Of this officer we wish to say a word or two. He was a man of small stature, particularly for a Swede, having very red hair and a freckled face; he wore a huge pair of boots, which met buckskin breeches at the knees, both wearing a venerable aspect; a very long-skirted blue coat, and towering *chapeau de bras*, and by his side was swung a massy sword in iron scabbard; and whether we look to the exterior of the costume, or the cut of his cloth, we might well go back through a long line of his ancestry and still find its likeness. It was sufficiently martial to

look upon for the office he held; but there was a time when it might have been the habiliment of his father, or grandsire; and for battle-field or encampment, for purification good, it would have been improved in its good looks, and of nearer kindred to hygiene.

In crossing the Sound, four English miles wide at this point, in a small row-boat, we had the pleasure of being shown, by Professor Eckström, Surgeon to the King of Sweden, the former residence of the distinguished astronomer and philosopher, Tycho Brahë,—its elevated site afforded a fine view of the white house. We had the pleasure of forming the acquaintance of the Professor at the Medical Meeting at Hamburg, in 1830, and, falling in with him at Elsinore, he politely gave us information respecting the mode of travelling in Sweden. He was a gentleman of fine talents, had travelled much through France and England, and spoke the English language very correctly, as did his countryman the celebrated Berzelius, whom we found to be a gentleman of bland, pleasing deportment, while we sojourned at Hamburg. We admire and love the people of Sweden; but the government is the personation of tyranny, and here, as everywhere else, gives an aspect worse than prosperity over everything it rules.

We found a very pleasant landlord at Hellsingborg, and a comfortable house. Arrangements were made for the morning after our arrival for setting out for Götheborg. Travellers in Sweden are under the protection of government. By describing our own passage from Hellsingborg to Götheborg, we shall give a specimen of travel in that country. A coachman was procured, who provided the coach and horses to start with, furnished us with the expense for relays of horses, tolls for bridges; from the beginning to the end of our journey, the amount being advanced to the coachman, we had no interruption. They have what is termed a forebode,—a boy with one horse and a light cart,—this forebode is started two hours in advance of the coach, and notifies, as he keeps in advance, that a certain party are approaching, who want so many horses, breakfast, dinner, accommodations for the night, as the case may be,—by law they are obliged to be ready, or incur a

penalty. When you arrive, everything will be ready,—horses at the door, meals on the table, or ready to put on. The forebode carries your baggage, and it is at the risk of the government; but without the forebode, it is not. Charges are very moderate, the price for horses, &c., being under public regulation. The roads are at least equal to any in the world; from Hellsingborg to Götheborg, one hundred and fifty miles, may be said to be like a bowling-green, not a stone to be seen that would cause a jolt, although they, in some places, wind through gaps of high hills, some of which seem to be formed exclusively of stone, and are devoid of timber or vegetation. Their horses are small and go unshod, will travel six or seven miles per hour without apparent fatigue.

In travelling, we did not meet a single road-wagon, nor did we, to the best of our recollection, meet or overtake a single carriage, and everything wore the appearance of lack of enterprise. There is much water-power in some of their streams, and we were surprised, at one place, to see one of the finest streams we ever saw with rapid current, having a windmill on its high bank, near the bridge we crossed. We will here notice a small affair, which, however trifling in itself, is characteristic of what obtains with the lower orders of Swedes, and having a bearing on their hygiene. At one of the places where we changed horses, the woman of the house, about sixty, wore a cap that defied any one to tell what it had been made of; it fitted close to her head, and had been worn till it had the appearance of buckskin that had been glossed with dirt. We would not have been surprised to have heard that it had passed its fortieth year of age. Such things are capable of producing disease without contagion, by generating malaria.

One incident more, and we shall drop this digressive portraiture. It shows the tyranny of their laws and usages. We arrived at the last relay for horses, and found the master of the house absent, and that the young man whom he left to provide horses for us had gone off to a mill-dam with the horses, and did not return for about two hours. When he came, the coachman attacked and struck him four or five blows at the junction between his head and neck with his utmost power, and from

the part selected, and the violence of the blows, he must have intended to kill him. We were alarmed, and peremptorily commanded him to desist. The young man must have had something of a bull's neck, for he did not show any damage, whatever pain he may have felt. In this mode of travelling, it is necessary for some one to accompany the coach to take back the horses, and we were told that it is optional with the coachman whether that person sit on the seat with him or run seven, eight or ten miles beside the coach, or run the risk of losing the horses in his care. As we were about to start, it began to rain, and it rained violently while we went rapidly not less than two miles; during this time we had a runner running through rain, mud, and mire. It was in vain that we repeatedly begged the coachman to take the young man up. No longer willing to bear the sight of such cruelty, we advanced and clapped him on the shoulder, and declared positively that if he did not take his runner in, we would leave the coach at all hazards, and thus we succeeded in relieving the young man, who, under all the circumstances, was running at the risk of his life; yet the coachman, independent of this act, was obliging, polite, and master of his business.

There is such a continued sameness in the Swedish reports, that we might venture to assert here their utter erroneousness, by a simple comparison with what has been observed in every other country; but some of the observations are so special and so peculiar, that we deem advisable to continue our examination somewhat further.

"The reports of the district physician Dr. Ossbahr, plainly show that the inhabitants at Tjörn, really exposed themselves in every way to the pestilence, and that they were in such a condition as regards their customs and their habits, as pre-eminently to favor the progress of cholera. The mortality in Tjörn, seems to have much exceeded the usual average. Out of fifty-one cases twenty deaths are recorded." How are we to understand the assertion that "the people exposed themselves to the disease in every way?" We suppose that here as everywhere else the people attended to their business, only they did not look out for that which could neither be seen nor

controlled; but, says Dr. Ossbahr—"they were in such a condition as regards their customs and their habits, as were pre-eminently favorable to the progress of cholera." If cholera progresses by infection, why shall we associate habits and customs with it? We take it that there is one cause, and one morbid condition in begetting and passing cholera through a place; and, whether that place be small or large, it runs its course at most, in a few weeks, and like a will o' the wisp, it is presently seen somewhere else. What becomes of the contagion, which, according to the Swedish reports, generally gained its greatest malignity about the end of the third week? But mark the singular insinuation, that the mortality was greater here than usual, and "seems much to have exceeded the usual average." Does the reporter here wish to convey the notion, that the carelessness of the people in neglecting the usual seclusive Swedish measures, thereby augmented the proportional mortality? Does not this militate against the notion of contagion? and is it not strongly in favor of a morbific matrix in the atmosphere, and that there is supperadded a secondary morbific entity to the primary contamination? And, we believe, as the force and extent of the secondary cause, so will be the extent and malignancy of the epidemic malady.

"In Areby, when the disorder first appeared, the greater part of the inhabitants were attacked, and only three recovered. It was observed, too, on the other farms, that most of the cases occurred in one or two houses or families." The excessive mortality at Areby is ascribed, by Dr. Ossbahr, to the circumstances that three families, which before had inhabited separate chambers, all "upon occasion of the first death from cholera crowded themselves into a single room, wherein children and adults, the diseased and the healthy, continued to reside, in the most extreme misery and filth." We are left to guess at the greatness of the mortality at Areby, since we are told that three died, but not how many were sick. On the other farms, too, most of the cases occurred in one or two houses. Indeed! one or two, no matter which. The inhabitants after one death crowded into one room, there to undergo the privations of a crowded space and filthiness. Doubtless

such a state of things would increase the risk of febrile diseases whether cholera or not, but have we not seen for ages, that such things will generate malaria, which, until the last few years, never partook of the choleraic character? Our reporters would here contend that this is a proof of the presence of contagion, but to say nothing of other countries, our observations throughout this vastly extended country are entirely at variance with those so sedulously advocated by the doctors of Sweden—here is a strong instance of the opprobrium, *doctores dividuntur*. Still, all this is reconcilable to truth, as to the facts; and though "facts" are "stubborn things," it is but too common for observers to draw therefrom wrong conclusions, and in no department of philosophical inquiry has it obtained more than in the science of medicine.

Dr. Ossbahr, who was one of the district physicians, during the epidemic of 1850, reports that, "it was impossible for me to obtain attendants to wait upon the sick, except among their nearest relations. At length I persuaded a few, both men and women, to undertake this office; but alas! after a few days, the best and the most active nurse, Anna Olsdotter, took the disease, and still worse, she died!" We may here raise a question as to the moral, involved in striving to "persuade" a person to undertake the office of a nurse, in a disease believed, by the persuader, to be so deadly infectious that a man by lying down a little while in a bed where a person had died of the disease, or by reading prayers beside a sick person, or by associating with a person whose clothes were so imbued with the fomes of the disease, that, whereas it could not find an entrance into his body, took occasion to immolate his two children; all these and many other preposterous items; we will not honor them with the name of facts; they are mere suppositions;—after all, we do not believe there was anything like manslaughter in this case, seeing, as we believe, that as regarded the origin of the disease, all who breathed the choleraic air through that part of Sweden, were liable to be affected, modified only by their condition as regards the non-naturals. Persuasion in such a case should be addressed to near relatives, for no hire can compensate for the business of nursing, if the

disease is really under the control of a personal infection of a most terrible deadliness.

Dr. Ossbahr continues,—"When I first arrived on the Island (Nov. 30), I earnestly entreated the authorities not to permit the healthy and the diseased to remain in the same chamber. This, however, was neglected, or no measures were taken to enforce obedience. During the first days of my residence at Tjörn, the doors of the affected houses were constantly closed to me, nor could I anywhere obtain the requisite attendance on the sick; but no inhabitant ever hesitated to attend the funerals of the cholera victims, where brandy with camphor dissolved therein, was swallowed in immense quantities."

It may be remarked here that, Dr. Ossbahr took charge of his district strongly impressed with a belief, that the most malignant contagiousness belonged to epidemic cholera; no wonder, therefore, that he frightened those simple people so as to fear each other; and, still more to look upon the physician as the carrier of the seed of the malady; for, to them it might seem, if he excited their fears of each other, and that it was his interest to spread the seed, that it might produce to him a harvest, in the expected crop of disorder, by which they saw him get his living; nor would they readily believe that he would risk his own life, unless he possessed some prophylactic, which they did not. Something like this might have been the reason why the doors of infected houses were constantly closed to me (him), "as the doctor reports. A poor compliment is here paid the populace in charging them with so strong a liking for the *ardent*—it is, however, probable they were led by some notion of its preventive qualities, and therefore, it is not unreasonable to charge the doctor with being negatively the cause; for, it seems that the authorities differed with the doctor, as to the contagion, as we shall presently show; seeing the doctor striving to compel the authorities to separate the well from the sick, and contending, too, that the disease is in the highest possible degree contagious, while the authorities contended that, not one in a hundred, who had visited Götheborg, the pandemonium from which the doctor derived the pestilence, were infected. The local authorities 'assert that not one

of a hundred individuals who visited Götheborg, while the cholera raged in that town, were affected with the disease either there or on their return to Tjörn.' But, says the reviewer, Dr. Ossbahr tells a very different story, without however directly contradicting the assertion."

What shall we say here? The above discrepancy is matter of fact. Shall we believe that the respectable individuals who composed the sanitary board were as well, and probably better informed, in respect to trade and travel between Götheborg and Tjörn, than the doctor? The doctor says, "when I arrived on the Island (Nov. 30), to take charge of the district." From this fact, we have a right to believe, that the doctor was sent there by the influence of Dr. Berg, who seems to have been fortunate in having all his correspondents contagionists. The district physician could not have as early or more full particulars of arrival and seizures of the disease as the *local* authorities. But how shall we dispose of the assertion that, the doctor made a statement of facts; the authorities another directly contrary; and yet, the doctor disproves their assertions, "without however directly contradicting the above assertion?" We leave those who can, to reconcile these assertions, so diametrically opposite, for we cannot.

Dr. Ossbahr reports that the local authorities would not enforce his desire and advice, that the sick and the well should not remain in the same chamber; but it was not enforced. So far as we saw Swedish houses, they are very small in the country and villages; seldom having more than kitchen and one room down stairs, and a loft or two above; now what can be done in such a case? Will you drag the sick from their homes, and put them into hospitals by force? But, this cruel expedient is not likely to answer any good purpose, but would increase the risk of spreading the disease if it be really contagious, for do what you will, the sick, if nursed at all, must have nurses that are well. Could we believe the reports, as made by the physicians (we mean the conclusions), who catered for Dr. Berg, to find *one* alive after the epidemic in Sweden (1850), would wear much the appearance of a miracle; nay, we may reasonably ask, how did they escape immolation?

We are told, in the Swedish reports, that some clothes re-

maining from persons who had died of cholera were unpacked and sold, and that a man named Jacob Christansson, who had attended the sale of these clothes, was *seized the day after*, Nov. 16th, with cholera, and died; and six fell victims to the contagion, caught at the same time. We are not told what became of those pestiferous clothes. We may reasonably imagine, if such havoc had arisen from that lot of clothing, that people might have been destroyed by scores or hundreds, if the poison is so potent and so diffusible, for those six victims must have left clothes, and their bodies, like his of whom they imbibed the poison, must have generated the same seeds of pestilence wherever they were taken.

"Unhealthy and crowded dwellings, want, and intemperance, greatly increased the number of victims; and it was observed that the malady was peculiarly severe in those families where many individuals resided in one or two small rooms; while, when cholera appeared among the better classes, it seldom spread to the rest of the household, especially where the dwellings were large, airy, and well kept." What are we to infer from the above paragraph? That material susceptible of ozonization must be present; but we cannot safely conclude that the disease is the product of a *local specific infection*, except where there exists a choleraic poison in the general atmosphere, and such a poison has so existed over Europe and North America for more than twenty years. We admit that malaria arising from small, crowded, dirty houses increased the risk of seizures of cholera, and the altitude of chambers, we believe, has a strong bearing on the fomes of the disease; but other things are to be taken into the account—poorer living, greater fatigue, and the use of food affording little nutriment, and not always in a state of purity and freshness. Does the reporter mean to say, that the space intervening between the sick and the well, in large houses, diminishes the risk of contagion? Such an opinion is not sustained by common sense, nor by experience. We shall show hereafter, its utter fallacy, by the exposition of cases in epidemics which we have seen.

"Two old persons, man and wife, who lived about an English mile from Stafered, but were not known to have had any com-

munication with infected persons, were attacked with the disease, almost at the same hour, and both soon died."

In the instance before us, it is acknowledged that the man and his wife were not known to have been exposed to the infection; but, nevertheless, the reporter says, they infected the nurse who attended them, and from this woman they charge the spread of the pestilence. If this were the nature of these circumstances, how could the disease ever be arrested? From the zeal with which cases are hunted up to support the notion of personal infection, we may safely conclude there had been no such exposure; and this is a fact which might well have arrested the special attention of the medical observers; for it is a matter of the deepest concern to mankind to know where the fomes of cholera has its being, since it is by such knowledge only that we can adopt prophylactic measures, and great are the evils attendant upon the adoption of the belief of personal infection or contagion; for we think it hardly will be questioned, that cholera is always the result of the same agency. If these old persons were affected with epidemic cholera, all the labor of the Swedish physicians to establish an infectious character for the disease, must sink beneath a just inquiry, for there was no exposure.

"A soldier, who had conversed with this man, in the open air, after his return, but had not visited his house, took the disease on the 22d of November, and before the 28th of that month, two of this man's children died of cholera, while another child, and his wife, were severely affected." The account then goes on to trace a number of cases and deaths derived from the case of the soldier, who was slain, not on the field of battle, but by the seeds of pestilence seizing fast hold of him in the open air, because he dared to stand, not at the cannon's mouth, but as a mere civilian, before one who now, like a porcupine throwing off his quills, or the skunk his odiousness, pierced his body with unseen darts, armed with potency to kill, and kill and travel, and travel and kill, with an unseen besom, made up of deadly tissues.

"The village where these cases were observed was, as regards its sanitary condition, eminently favorable to the progress of cho-

lera. Large dunghills were accumulated around the cottages, the inhabitants were crowded together in dark and filthy chambers, to which fresh air never found access, while their diet was little if at all better than that of the Irish peasantry." There is nothing remarkable in all this as regards the mode of living throughout Swedish villages, where boys are seen going to school without hats on their heads, and wooden shoes on, which give notice, of a cold morning, by the clatter while they approach at the distance of a square. Where potatoes are used almost as much as in Ireland, but of inferior quality, and rye bread alone, or as an adjuvant to potatoes or beans, does not much improve the food. We were informed that those who can procure the flour bake once a year, others semi-annually or quarterly, according to ability to provide. The family of the present writer saw our landlord, at the best hotel in Götheborg, dining upon potatoes and salt, after the viands, which were left at our dinner, had been removed. The manner of making their rye bread does not favor its digestibility—all we saw of it was made after the fashion of the passover bread of the Jews, and looks to be dried, rather than baked; nevertheless, it is reasonably palatable, but, we would say, inferior to the potato of the growth of the Irish soil. In the houses of the rich we see buns of the most beautiful wheat flour, and well made; but even here you get a portion of the national bread to nibble at, while your plates are changing. We have a remark or two to make respecting the poverty of living of the lower orders in Sweden, and then we shall drop this notification. Capt. Dunbar told us he had seen an old woman in Götheborg, who had come fifty miles by water, with a single fish for sale, of extraordinary size; but it would bring but a poor return for so long a journey. We saw quite an old woman in bed in the hospital at Götheborg, smaller and leaner than any other woman we had seen in that country. Her right forearm had been fractured in two places, and the middle fragment stood almost directly across, or nearly at a right angle with the upper and lower fragments. We saw it had been long healed, and, on inquiry of the physician, who graciously conducted us through the institution, we were told by the humane incumbent, that he had admitted her

to save her from starvation, as the arm totally disabled her from laboring for her support. We shuddered at the sight, and reflected with wonderment how a rational creature could fall under such a disgusting bereavement. Had she had any sagacity to let her arm hang at her side, or upon a pillow or a board, no such deplorable deformity could have taken place.

The report continues speaking of a place called Lilla Edit: "Here, as in other places, it was remarked, that many persons whose bowels had been habitually constipated for years, became perfectly regular in their evacuations, during the prevalence of cholera, but when the pestilence ceased, their bowels again became inactive." What does this signify? Does it lean towards the contagiousness of cholera. Does it not rather strongly indicate the presence of some new element in the atmosphere of that location at that time; and is not this opinion strengthened by the cessation of the altered condition of the air in which those persons breathed? To our apprehension, a stronger proof of non-contagiousness could not be found. Surely, the infection transferred from one person to another could not have given existence to a new condition of the bowels of certain persons. Then what was it? Why, what was malaria to others, was sanative air to those who were thus affected at Lilla Edit, and other places; they only enjoyed its comforts, and they "were many." We have seen but one well-marked instance of altered bowels, in the person of a lady of unquestionable veracity, who was in feeble health for a long time before this strange affection: upon her weak bowels during one of the severest cholera epidemics that we have seen, habitual looseness gave way to regular action.

Among the reporters to Dr. Berg, we have the name of Dr. Ekegreen. We notice among the doctor's observations the following: "Whatever difference of opinion there may have been regarding the efficacy of measures of shutting out the cholera, all seem agreed as to the advantage of shutting the disease in where it has made its appearance in a house, whether in a village or in the country." Indeed! has the cholera become tangible in Sweden? Have we the power and the choice to let it in, or turn it out? Admitting the notion of contagi-

ousness of the malady, how can we shut it in in infected houses? Whether the patients live or die, communication must be held with persons who administer to their wants. To us, there seems to have been a strong delusion existing among Dr. Berg and his colaborators, in giving so decided a habitation to a thing which, so far as we can discern, is quite occult; and as we believe is neither to be barred or debarred in or from our houses. It appears now here, now yonder, and never abides longer than a few weeks in one place in great force. In Sweden it appeared in 1834, and ceased in a few weeks, and did not show itself again till 1850. Why does it cease in cities, towns, and country places, where no measures of prevention by seclusion were used for that purpose? Before the reporters can justly hope to establish their opinion, it is incumbent upon them to show, that, as they all set out with the belief of the infectiousness of cholera, the epidemic, by their measures (prophylactive) in shutting in and shutting out, ought to have lessened the number of cases, and of course its mortality, and shortened its term of domiciliation; but as far as we can discern, speaking of its totality in Sweden in 1850, they fared no better than places where no attempts were made at seclusion, or delusion propagated; so, that while nothing useful was obtained by fighting against morbific shadows, much evil necessarily arose from the enforcement of sanitary or seclusive efforts. When we can "ride on the whirlwind and direct the storm," we may hope to rule the anti-hygienic condition or principle which modifies our atmospherical diseases, that are known to have existed from the days of Hippocrates at least; and are held to be the offspring of malaria of different kinds.

We have now gone through the principal details, or what may be termed the narrative of Dr. Berg's Reports, intent only on finding out the truth—we do not mean the truth as regards the supposed facts, but the true nature or character of epidemic cholera; and it will be admitted, we think, by most medical readers, that whether cholera is propagated by a new element or principle in the air, or dispersed from one place to another by personal infection, there is but one choleraic poison.

We feel no vanity on the subject, but our opportunity has been ample, and we do not reason on, or narrate matters of fact from those who were employed to collect information for us, as was the case in Sweden. Although we consider the character of cholera to be open to inquirers in general, we hesitate not to declare as our settled conviction, that there is but one predisposing cause or agent which can produce epidemic cholera, and that needs no medium of conveyance from point to point, because the primary element has the quality of ubiquity.

However important and however praiseworthy the knowledge which has been attained by modern investigation in pathology, and perhaps no one more lightly appreciates such knowledge, we still think, the discovery of Sydenham, and the lucid manner in which he presented it to us, has lost none of its importance, or is in any degree disrobed of its brilliant vesture, nor more brilliant than well fitting the majesty it envelopes. To us it seems that however well the study of medicine may be entitled to the character of a science, still it is beset in all its multifariousness, with things occult and things uncertain; and often with things unfixed. Such, the characteristics of medical science, and medical lore and inquiry, no wonder that our lessons are hard to get, or that investigators shall differ; but, although the intrinsic nature of the anti-hygienic condition of the stratum of air in which we breathe, is subject to semi-occultness, still its presence and its rule is as manifest as that of electricity, apparently the prime motor of all secondary things. This is the agent which beautifies the forest and the fields with their verdure, gives robes to the fishes and the fowls; and all the gaudy vesture of the birds, even to the tints of the feathers of the latter class; also exerts its power upon things the most minute. This great power dwells in the vaulted heavens over our heads, and when things below languish, comes down in robes of fire, and in exuberant power explodes with a force immeasurable. There is a principle or power which, though ever active, and although obedient to man's devices in calling it from the clouds by a simple kite, and making it the messenger to parts far off, still it has the quality of ubiquity;

and this principle it is we opine that rules the air we breathe, and gives existence to morbific cycles which rule our diseases; among which we believe now stands epidemic cholera, and this cycle so formed, has existed in the United States since 1832, and never before since the settlement of the country by white men. In the body of this work, we have endeavored to show that the cause of cholera has a binary quality. We have referred to the supposition that the new cycle, which now exists, has the quality of impressing a new condition on the malaria which has so long been the cause of our summer and autumnal diseases. If we can only offer this opinion on supposition, it seems to us the most satisfactory explanation, and is corroborated by the phenomena characteristic of electricity; it is everywhere, in all things, still it has its gambols; it dwells in the clouds; it is diffused over things on the face of the ground, yet it has its modifications; diffusion is its every-day garb; but, again, it has its flights of aggregation, and nought can then withstand its power. It seems to rule for our good by its general laws, but has its vagaries, and among these is the production of diseases and death upon all things, whether those that breathe through animal lungs, respiratoria of the lower orders, or the endosmose and exosmose of the vegetable tribes.

We notice some discrepancies between the details, and "the able resumé of Dr. Berg," so termed by Dr. Carlton. But to proceed: "In 1834, the pestilence advanced on the eastern coast, near thirty Swedish miles further to the north, and Götheborg among the rest suffered severely. From Götheborg, in 1834, the disease spread in a northeast direction, as it did in 1850, following the course of traffic along the Götha River up to the great Werner Lake. Besides the capital, Stockholm, eighteen other provinces were affected in 1834; but Malmö and Göttland escaped." We have here to remark, that on the same page where the above assertion is made, we read, "in 1850 it lingered long in Malmö, an outlying spot, with but little trade." In the details as given by Dr. Berg, we read, speaking of the cholera of 1850, "Malmö is one of the ports of Sweden which has the most frequent communication with Germany; here the steamboats from Lübec and

Travemunde land their passengers, and an almost constant intercourse is kept up with Copenhagen." It has been seen that Malmö escaped the cholera in 1834, but in 1850 it was supposed to come from Lübec, and lingered a good while. How shall we reconcile the assertions that, as noticed in the details, that city was a port having free intercourse with Germany and Copenhagen; but in the resumé, it is an outlying port with but little trade? How happened it that we are told in a note that "in 1834, the port of Skänor, distant half a Swedish mile from Malmö, was ravaged by cholera?" How did it get there, while Malmö, having free steamboat communication escaped?

The deaths from cholera in Sweden in 1850, were 1761, and of these 378 died in Malmö, said to be "an outlying port, having but little trade;" so that the mortality in Götheborg, and all the long conduit of the Götha River, and its radiating lines to towns and country, and canals, and lakes, affording the media through which the vast trade, making the very heart of Sweden as regards intercommunication, is scarcely four times greater than that of the humble town of Malmö. To our apprehension, this fact gives but little support to the supposition, that choleraic infection is more potent than even small-pox, if we give credence to the belief that a man may, by almost a momentary exposure, be overtaken the next day with a deadly disease, and die in a few hours. We have to take into the account of the mortality of 1850, towns, islands, &c., between Malmö and Götheborg. This seems to be a proper place to repeat what we have elsewhere written,—that in the United States cases of cholera have existed in many parts sporadically, endemically, or epidemically, and in its introduction, epidemically only in periods of the year when diseases the offspring of miasm were wont to prevail.

According to our judgment, the most imposing appearances of the Swedish Reports is, the apparently long chain of coincidences in the things seen; but we may remark that coincidence, is by no means, always proof of identity or correlative affinity. In matters of this sort we must compare things with things in other places; and even then, we are not safe in

coming to conclusions, till we have our opinions verified by experience. The reports before us tested in that way, will be found not to quadrate with what has been seen in other countries. But especially, we must not forget that, however long the chain of alleged transfers of personal infection, the whole resolves itself into a single one. In the question before us, a single instance will intrinsically decide it—if one instance of transfer occurs, such will be the nature of all the rest of attacks. Here, again, we must compare the grand whole with totalities in other large places, and bring into the investigation all correlative things—relationship with other diseases, anterior to, and contemporary with cholera, as well in relation to symptomatology as to curative means: and, however little reason we have to be satisfied with our success hitherto, we deem it highly important to bear in mind, that cholera, like all dangerous diseases, is now entonic, and again atonic, and of course is to be treated accordingly; bearing in mind, moreover, that this state of things obtains both sporadically, and also epidemically, the former much the most commonly; and as far as we have seen, all the epidemics were instances of the entonic cast, and to be treated as such. It is true that after the malady has disturbed the natural functions to a certain degree, which can only be judged of at the bedside, prostration and real exhaustion exists to an extent which leads to fearful mortality, under every treatment that has been tested; but there is a culminating point in dangerous cases, whereat sedative measures dare not be used, and here almost uniformly, stimulants will succeed but little better than sedatives, if at all. But of the strange things attached to the medical treatment of cholera, nothing seems so strange as that it has, almost everywhere, been treated empirically; all look for some nostrum or specific; but we have already noticed this truly important branch of our subject.

In concluding our examination of the Swedish Reports, we may remark, that we cannot divest ourselves of the impression which was made upon our mind, that the several writers of those Reports seem to speak with some point, on the mortality

wherever they believed they had proof of personal infection; on the other hand, they exhibit evidence of candor in ascribing the more or less extension of cholera to impurity of the circumambient air, as deteriorated by locations, small and filthy houses, in short, by whatever usually gives rise to ordinary miasm; but, if there be virulent infection generated in the bodies of the sick, why should we look for anything else for the generation of cholera? Upon a cursory notice of this *compound cause*, it may seem that it matters but little, whether there be animal infection, or, whether we suppose it to be in the air; but a closer scrutiny shows us that there is no animal infection. All the restraints and privations to keep the sick from the well are replete with evil, hardships, and delusive proceedings, that greatly interfere with the things of the poor, for among the poor, i. e. in their household affairs, &c., will be great distress, and this added to great fear, which will always be excited by the announcement of contagion, will be seen to increase the number of victims of attacks, and add to the number of deaths.

The view which we take will give far less alarm, will lead to greater vigilance in nursing the sick, and to know or believe that there is a principle in the air of mild bearing, in general, which governs attacks, but capable, under peculiar circumstances, of becoming highly dangerous or destructive, is less alarming. But, believing, as we do, that wherever a great epidemic is approaching, so to speak, by arresting associated harbingers, or in other words, the mild forerunners associated with cholera (i. e., bowel complaints), the people will strive against the true enemy, and not fear its approach, because whatever is *seemingly tangible* will give rise to more fear than things that *are not seemingly tangible*. We admit, however, that under all the aspects in which we can place this subject, we owe the truth and nothing but the truth to all who look to the medical profession for guidance and relief.

EPIDEMIC CHOLERA AT COLUMBIA.

In our examination of the reports of Dr. Berg, of Sweden, we promised to give a remarkable instance of an outbreak of cholera, at Columbia, Pennsylvania, in 1854, in which the circumstances attending, conclusively prove the disease to be non-contagious and non-infectious. We visited Columbia three times during the presence of the disorder, and saw specimens of cholera in its several stages, of *cholerine*, *cholero-dysentery*, *and cholera lethalis*. But we have already so fully discussed the character of cholera, and the medical treatment of it, that we shall only incidentally drop some brief remarks, as we proceed to give a true account of everything associated with the visitation, both with respect to the locality, and the special character of the pestilence.

Let us then turn our attention to things appertaining to the locality. The town of Columbia is situated on the Susquehanna—the river immediately opposite, being one and one-fourth mile wide; and just opposite to the present south limit of the town, there is a dam across the river, which at low water can be made to pour all its water into a tide-water canal, so far from the bay as not to be influenced by the tide of the Chesapeake, into which it empties—and the damming of the water arrests the current of the water at times for a distance not less than the width of the river, so that there is a square area of one and one-fourth mile of still water surface. The summer of 1854 was warmer than usual, and the river was lower than it had been for many years, and water-grasses grew luxuriantly throughout the dam, floating on the water for weeks under a burning hot sun, and to this we may add, that the dam would necessarily give rise to large quantities of deposits coming down the stream, among which it was said were a few dead sheep, not sufficient in our opinion to have any influence.

There is a street running parallel with the shore of the river, and from this street, having houses only on one side, there is passing off several streets at right angles with the

shore, in which the ground rises by a pretty considerable ascent. The street along the river is perhaps one hundred yards from the low water line, and this space is occupied in greater part by lumber; but the piling of the timber, and the face of the ground is kept in good order, as far as we have seen. A little distance above the town relatively to the river current, there is a large basin, where there is a considerable pool, in which the water previously to the outbreak of cholera had a greenish surface; and it was alleged that the use of this water had a share in the production of the pest, but we were informed by Dr. McCorkle, who is a native of the town, and highly respectable in his profession, that part of the town is entirely dependent upon pump-water, and that there was quite as many cases of the disease where the pump-water was drank, as where it was used from the hydrants which furnish the water from the pool.

We have now to speak of things appertaining to the epidemic. We recently visited Columbia with the view of getting the most correct information that could be obtained from reliable sources; the disease being ended and opportunity had to view everything calmly, and without prejudice, or undue excitement. We shall now notice everything we met with, adverse to our opinion, in respect to contagions. A very respectable citizen informed us, that an emigrant family, man and wife, and one child, arrived in the Philadelphia cars—the man and child having the cholera upon them, both died; it was said the woman had the disease afterwards, somewhere in the West—they were taken to the upper end of the town and near the river, being thus placed almost out of the town limits, but they were visited by a number of persons; and an attempt was made to magnify this circumstance, as having been followed by several of those visiters having been overtaken with the cholera; but here two gentlemen of equal respectability, and who resided near where the sick family lay, promptly contradicted this report. Of those who were known to have been there, one physician, Dr. Cochran, of high respectability, died of the disease. Then our informant went on to tell us that five hundred sheep had been drowned and floated down into

the dam of which we have spoken, and thus was a mass of putridity accumulated, and thus was the epidemic produced—here again, by reference to the Spy, a very respectable newspaper published at Columbia, it was seen that those sheep had not been drowned till two or three weeks after the appearance of the cholera.

This seems a proper place to notice, that although we visited Columbia three times during the epidemic, and had free intercourse with the most respectable citizens of the town, several of the physicians of the town and from Philadelphia, we did not hear one word about the emigrant family; and there appeared to be one opinion with the inhabitants, that the disease was occasioned by the effluvia from the great river-dam. We do not doubt that emigrants arrived having cholera, but the notion of contagion is an after thought.

The above paragraph contains all the assertions respecting things supposed, by a few persons, to give support to the belief of choleraic contagion. We were informed by gentlemen whose veracity could not be questioned, that cholera had occurred in two women in the last week of July, so well characterized as to be implicitly relied on. We were furnished at the office of the Spy, with this notice—"Last week of July, two cases of cholera occurred, on Front street, above Locust; the cases were women, and the house occupied by them a mere shanty, and very filthy. One of the women was intemperate, and occupied a room over a filthy sink. At this time there was considerable excitement—sanitary measures were resorted to, and no other cases occurred." Here, then, is cholera in the last week of July, to which must be added a general prevalence of intestinal diseases, in the stages of cholerine and cholero-dysentery, or what has usually been termed diarrhœa and dysentery. How then will these facts quadrate with the supposition, that an emigrant family, who arrived on Thursday, the 7th of September, a period of nearly five weeks after two cases had produced much excitement, and worse still for the supposition that the stranger family brought the disease? They were taken with the disease into a remote part of the town, where the man and child died. The travellers arrived

on Thursday; the next day one of the citizens died; on Saturday, 24 deaths occurred from cholera; on Sunday, 25; Monday, 10; Tuesday, 10; Wednesday, 13; Thursday, 4; Friday, 9; Saturday, 6; Sunday, 4; Monday, 4; Tuesday, 5; Wednesday, 5; Thursday, 1; Friday, 3; Saturday, none; Sunday, 2.

Can any man of common sense believe that a person, arriving and dying of the cholera, could have disseminated from his body an invisible poison, that produced twenty-four deaths the next day, and twenty-five on the second, and so on, to occasion one hundred and fifty deaths in fifteen days? but we may note particularly, forty-nine deaths in about forty-eight hours. It may now be said, that so far as *cholera lethalis* was concerned, the disease soon lost its epidemic character; for, but a death or two occurred on each day, after eight or ten—but about one hundred more victims fell before the pest. Can common sense possibly reconcile the facts, that a disease could pass diagonally several squares of the town, or in many different parts of the town, and produce not only seizures, but deaths numbering forty-nine, in about forty-eight hours? these forty-nine cases were scattered over the town; but most of them occurred in the streets the ends of which were presented to the river.

What is to be said of what has been seen, according to the opinion that the emigrants brought the choleraic contagion; and after the destruction of about one hundred and fifty persons, in two weeks, the contagion suddenly dropped its prerogative, and ceased to seize or slay? Are we not warranted here in believing that the malaria from the river had its rise, its acme, and its decline? Why did it decline from the epidemic condition in a few days, and gradually assume the sporadic condition? Simply because the morbific material had been exhausted, and now again was to be seen cases of cholerine, and other cases wearing the aspect of ordinary bilious fever.

On Friday afternoon, 9th of September, a high southerly wind blew over the river into the town. On that day there was one death from cholera, which, no doubt, originated, as did that of the two women who died in the last week of July. The

next day, Saturday, there were twenty-four deaths. These deaths occurring so soon after the deleterious gale of wind, strongly supports the opinion, that there is a prevailing *choleraic cycle* which rules every case of cholera. This view enables us to establish the belief that the *immediate cause* of the cholera was a poisonous air from the river; and it was remarked, that on those days that the wind came from the river to the town, the cases were increased; but on those days the wind blew from the town, that is, northerly winds, to the river, there were fewer deaths. This may, however, be accidental, and here, again, is proof that there is a prevailing susceptibility, ever ready to be roused up, which is antecedent to cholera outbreaks.

On the 14th of September, there was a rain, and one up the river, that raised the water sufficiently to carry it over the breast of the dam, and covered much of the water-grass; and this was supposed to have abated the cholera; but this disease generally comes, in its greatest force.

Columbia has a population of about 5,000, and it is believed by those who had good opportunity to know, that at one time about one-half, perhaps more, of the citizens had left the town. The terrors of Saturday, 9th of September, set the people into motion, and many left town. On Sunday the number was greater; on Monday much greater. Of those who removed to some distance, four or five were known to have died of cholera; but there was no account of any one being infected by those who died abroad. The amount of mortality was considerable; but we may remark here, that the greatest number of deaths occurred before many of the citizens had left town; but still the progress of the disease shows that the onset of the disease was, decidedly, its stage of greatest severity; and it is proper to remark here, that we were assured by reliable authority, that of those who were carried into the stage of *cholera lethalis*, or collapse, not more than two or three recovered.

There is reason for believing that the piles of boards and lumber, which we have noticed, had a retarding influence, by arresting the floating effluvia; and this accounts for there being more cases in streets whose ends, next the water, were more ready recipients of the malaria. We were informed that, in

one place, where the lumber stood thick, there were fewer cases than in other streets, particularly near the river. The ascent from the river is considerable, but we do not know the greatest altitude. The disease was as common, and as fatal, on an upper stratum as on the lower. We have already referred to the observations made in London, upon different strata, by which it appears that strata, of given levels, will be found to suffer less by cholera as we ascend. In the case before us, everything seemed to conspire to carry the poisonous air along, and the streets into which the wind blew almost in a direct line. We can readily believe that a poison held in the air of a lower stratum would be driven by the puffs of a gale of wind, as we see drifting snow propelled onward, by puff after puff, sending it forward. Indeed, we do not see how else the poison could reach higher points of the town. How shall we imagine that a poison shall rise from a comparatively cooler and denser medium, and ascend to the height of, perhaps, fifty feet, and not become diluted, and here dilution would doubtless abate the virulence of the choleraic poison; and if we might suppose, that if it produced cholera, the form of the malady would be the same; but admit this, and we must, we think, also admit that there will be fewer attacks; if this were not the case, we might reasonably suppose all visitations of the epidemic would be nearly alike.

Our main purpose in offering this account of the cholera at Columbia, is to show that the things seen appertaining to that outbreak, are utterly irreconcilable with the belief of cholera contagion. What we have written may well convince any one who is open to conviction, that contagion of a personal character could not have had any influence; and the idea, that the same sort of infection can be produced or originated by the effluvia of a river, and also, by elimination from the human body, is truly preposterous. We deem it proper, however, to notice a few more facts bearing on the subject of our present inquiry. Some of the humane and respectable citizens devoted much of their time in kind offices to the sick, and were constantly exposed. Had there been any contagious effluvium about the sick, they must have suffered. We made three

visits, and each time spent several hours among the sick and the dying; we were frequently in the hospital, where there were several patients, whom we carefully examined; and, on one occasion, sat an hour and a half in the presence of the sick, and as we had no fear of contagion, so neither did we suffer any injury.

The epidemic at Columbia was one of the severest visitations that has occurred in this country, and excited the attention of the physicians of Philadelphia, and as many as ten or twelve visited Columbia during the epidemic, and bestowed their attentions upon the sick fearlessly. A meeting of physicians was held on the 12th of September, for the purpose of giving some instructions to the panic-stricken and suffering citizens. The following is a report of the proceedings, but we may remark here, that all the gentlemen had but one opinion as to the character of the disease, but their treatment was peculiar to each of them.

On the 9th of September, Dr. Jewell and Dr. R. La Roche arrived at Columbia, from Philadelphia, from motives of humanity; but under the auspices of the College of Physicians, a meeting of physicians was announced, and took place the same afternoon, when the following proceedings were had:

Rules to be adopted by the citizens during the prevalence of Cholera.

1. Give prompt and early attention to any looseness of the bowels, or diarrhœa, by lying down immediately, and send for medical advice. Looseness of the bowels is the beginning of the disease.

2. Do not become alarmed. Fear will often produce the disease, which, when treated early, can in nine cases in ten be cured.*

3. Cholera is not contagious; that is, there is no danger from handling or going near to persons having the disease.

4. Use freely chloride of lime in your houses, cellars, yards,

* In the choleraic epidemic in 1832, not one in several hundred died, and we do not consider this an uncommon instance.

and in every place that is foul, by wetting it, and distributing it in plates about the premises.

5. Live temperately. Avoid the use of alcoholic drinks entirely. Keep good hours—avoiding the night air, and the early morning dews, as well as crowded assemblies.

6. Keep the body clean, and the mind free from all excitement.

7. Give notice early of any sickness in your family, that immediate attention may be given to it by your physician, or by the proper authorities.

8. Whitewash your cellars, shops, alleys, fences, and keep your houses clean and well aired.

9. Avoid eating unripe fruit, or indigestible food, and everything else that will in any way tend to produce looseness of the bowels.

10. Do not keep any dead animals, or decayed meats, or stale oysters, or spoiled potatoes, or other decaying vegetables, about your premises. Have them removed at once, covered with chloride of lime, or buried.

The above rules were adopted at a meeting of the physicians, held at Col. Herr's, this afternoon, and recommended for the government of the citizens, during the prevalence of the epidemic, believing if they are strictly adhered to, that the disease will be mitigated, and many cases of sickness and death avoided.

Drs. Wilson Jewell, R. La Roche, College of Physicians of Philadelphia. Dr. H. G. Jameson, Sen., Professor of Surgery, then of York, Pennsylvania, now of Philadelphia. Drs. L. D. Bodder, Elwood Wilson, Henry Hartshorne, Thomas Spencer, J. H. Jackson, W. F. Atlee, of Philadelphia. Dr. —— Harris, of Harrisburg. Drs. W. S. McCorkle, L. S. Filbert, A. C. Smith, D. S. Bruner, D. J. Johns, O. S. Mahon, J. Chester, of Columbia.

Approved and strenuously recommended by the Town Council.

J. M. Watts,
Chief Burgess.

September 9, 1854.

Most of the gentlemen above named were in attendance on the sick for several days. Some of them examining and prescribing for cholera patients for more than a week; and were present with the dying and the dead. We heard of but one dissection, which presented nothing new—turgescence of the brain most remarkable feature of the post-mortem, and most patients presented redness of the eyes and other symptoms of involvement of the brain.

Now, in the name of all goodness, how shall we allow ourselves to believe, that the most trifling exposure in Sweden, as reported by Dr. Berg,—such as sitting a few minutes beside a sick person; talking to a man in the open air, but who was not yet affected by the disease; lying down for a short time in a bed where a person had died of cholera; or being present a brief period where some clothes were opened that had been left by victims of cholera; and of a man coming from a place infected, giving it to his two children, not having it himself; for, we are obliged to admit the truth of the above as stated, of so many physicians being exposed in every possible way, with impunity. We have been informed since writing this clause, that Dr. Atlee had the disease after leaving Columbia. He was as much exposed as the citizens, then why not liable? Where is there room for doubt of the absence of contagion, after seeing the mass of information, of a similar kind to that seen at Columbia and other places, as it has been recorded in the body of this work?

We have elsewhere advanced our opinion advocating the belief that cholera strongly resembles our summer and autumnal bilious fevers. In corroboration of this opinion, we may remark that, Columbia has always been subject to a pretty full share of the miasmatic diseases that infest the shores of the Susquahanna; and, although the things which are everywhere acknowledged as the cause of intermittent and remittent fevers were present in greater degree than usual, there was comparatively very little of such fevers, though there was some blending of bilious fevers and cholera; but, a portion of the former were in the garb of cholerine and cholero-dysentery. Still more strange, Marietta, a small village three miles from

Columbia, up the river, was severely scourged with their usual autumnal fevers; but, there was no cholera acknowledged, and of course, there was none. Fevers prevailed along the river shores, in the several towns and villages, and farm-houses, but cholera was not acknowledged. Miasmatic diseases prevailed early in the summer at Columbia.

On the 15th of September, Mr. Samuel Heuston arrived at York, Pennsylvania, quite ill with symptoms of cholero-dysentery, under which he had been laboring during the time that cholera was at its height at Columbia; and, he had been living in Locust Street, where cholera prevailed in as great a degree as in any other street, except one; he was somewhat advanced in years, had been in delicate health during the summer, and was now much prostrated. Believing in what was said by the body of respectable physicians who met at Columbia that, "looseness of the bowels or diarrhœa is the beginning of cholera," an opinion this, that we adopted in 1832; we believed that Mr. Heuston was afflicted with that affection in its stage of cholero-dysentery, for, this was the character of his case. We did not think proper to resort to cholera specifics, but without regard to the prostration of our patient, we prescribed an active cathartic; at a single dose he took ten grains each, of calomel, jalap, and nitrate of potash; this operated pretty freely, and brought away bilious stools, during the night, and in the morning he told us, he had never in his life found so much relief from a dose of medicine, as from the evening dose. We now prescribed a weak mixture of sp. nitre and antimony; but it did not seem to afford any benefit, and we had to resort to the further use of mild cathartics, and in a few days our patient returned home, having nothing to contend with but debility, which soon wore off. We saw him some time afterwards in good health.

On the same day that Mr. Heuston arrived came his son-in-law, Mr. Greene, affected seriously with cholera, in the stage of *cholerine*. He underwent nearly the same treatment, as related in the foregoing paragraph, i. e., in both these cases, we are confident that most physicians would have used remedies to restrain the diarrhœa; we used active cathartic medi-

cine, and thereby arrested the advancing cholera, nor, do we believe that their speedy recovery was owing to their removal from Columbia, since it was now too late to expect direct benefit from change of air; but, the period had not passed at which relief might be expected, from depleting from the alimentary tube, in close alliance or sympathy, with all the inroads of cholera lethalis.

If the foregoing instance of outbreak of cholera, with its concomitant circumstances, does not establish the non-contagiousness of epidemic cholera, nothing will, and it would be useless to argue the question. The cause is so manifest, the outbreak so sudden, and the proportional mortality so great, that the ensemble is satisfactory in a philosophical view, and affords one of the clearest specimens of the character of epidemic cholera that has occurred in the United States. But we shall continue our remarks somewhat further.

We think it will be admitted, that the question, whether cholera be contagious or not, is one of great importance, and we have endeavored to investigate, and show the non-contagiousness of the malady; but the exhibition of the circumstances which were present at Columbia, have convinced ourselves beyond doubt, if we had not been convinced before: indeed, we would contend that there is one circumstance which should alone decide this question. Cholera, like all other specific disorders, can have but one cause, and is, therefore, in all places and at all times contagious, or in all places and at all times non-contagious. What shall we say, then, about an unlucky arrival of an emigrant family just at that juncture of time when the disease was about to break forth?

A careful investigation into the circumstances attendant on the outbreak will, we think, afford a strong—we were going to say argument, but we shall take a stronger ground; and say that if we cannot here draw a positive conclusion, there is not a single platform in medical science whereon to stand fast. Let us see. There were two cases of cholera in July—from whence were they derived? The malarious condition of Columbia stands high in the scale of malarious localities; the visible material which yields miasm was in unusual force: low water, hot

sunshine, exposed water-grasses, a southern gale of wind, and a simultaneous attack of *cholera lethalis*, in several streets on the same night of the gale; and also a simultaneous change of the prevailing diseases. With all these circumstances, and, we have added thereto, the universal predilection, so to speak, which cholera has shown for like localities; and who will gainsay the declaration that cholera is not contagious?

But, say the contagionists, several persons who visited the emigrants while sick fell victims to the disease. Here it really seems, that these contagionists not only insist on all cases occurring while visiting the sick are cholera; but, they really require for the admission of non-contagiousness, that no person who visits or nurses a patient shall take the disease, no matter how many absent from the sick in the same town or district shall take it. Others took it out of doors; and, many contagionists admit from atmospherical poison—then why not place all on the same footing? Those about the sick are not exempt from the epidemic influence no more than those out of doors; yet, if one sickens within, and some twenty or a hundred sicken without, many, even medical philosophers, will say, "See the proof—the nurse took the disease; it must have been caught from the sick." And besides that the nurse has as much chance to take the disease in the common way as he whom he nursed, he is supposed by contagionists to take the malady from a personal poison;—here, then, is a double chance for the disease; one outside like other people, another inside. Do not most contagionists who admit that there is an atmospherical cause, and also one personal, throw themselves into this dilemma? And if this were a correct view of the subject, he who nurses in infected districts or towns, must be doubly subject to the disorder. Verily, the nurse, according to this supposition, must live in great peril; and how much better would be the case of physicians? and, yet, they certainly do not suffer in greater degree than other people.

The reports of Dr. Berg, of Sweden, noticed in this work, are in a great degree devoted to showing how the cholera followed the courses of trade in that country, and we have a labored account of the mode and means by which the contagion

passed in the exact course of the trade, along water-courses. How then is it that no such thing occurred at Columbia? Wrightsville is a busy town on the river directly opposite to Columbia, and there was no cessation of intercourse: people passed and repassed daily; and we saw one of the physicians of Wrightsville in Columbia during the height of the cholera. Not one case of the epidemic occurred at the former town.

We have already noticed the fact that the appearance of the cholera in Columbia was attended with southern winds, which came across the great dam formed in the Susquehanna, and the northerly winds, while they abated the malady in Columbia, did not carry the pestiferous air to Wrightsville. Here is presented a thing inexplicable in the present state of our knowledge, but from the light which has recently been thrown upon what may be termed chemical electricity, there is strong probability that these anomalies which we now and then see, or which, indeed, may be said to be pretty common—we mean the occurrence of cholera in one town or district, while in another closely adjacent it is wholly absent—are owing to a double cause being absent.

It does not seem desirable to go into speculation on this point of our subject, but it may not be amiss to make a suggestion or two. Whatever may be in other countries or places, in the Middle States of our Union, thunderclouds rise in the northwesterly direction, and move more or less southeasterly; for this there must be some law. It has long been known that the lower stratum of our air is constantly varying its quantum of the electrical principle, clear, frosty mornings filling the hair of our domestic animals with electricity to repletion, while in damp weather with south winds, the old-fashioned electrical machines can scarcely be excited.

When we add to this, and much more that might be said, how electricity can be, so to speak, brought into fixed combination; as in turning oxygen by it into ozone; to say the least, it does not seem unreasonable to allege, that the apparent vagaries attendant upon cholera, are ruled by electricity.

We may well suppose that cholera poison, like all visible things, has its rise, its acme, and its declination. From the

suddenness of its assumption of the *lethalic stage*, and its early declination from that stage epidemically in different places, we are led to believe that there is something like ebullition, i. e., new affinities take place between the elementary integers which form miasm, of a volatile or perishable compound nature: and the pestiferous product soon becomes extinct; and in all these changes electricity performs an important part, as we see in the production of ozone. We must admit that there is some cause, and, what so likely to govern in these cases as electricity? Whether it acts by the union of new matter, or by the withdrawal of something from the compound miasm, we will not attempt to surmise; but electricity is over all things, in all things; it can control formation and life; and it can destroy things animate, and things inanimate.

We see the material before us that generates miasm; miasm is said to be a modification of ozone; ozone is said to be a modification of oxygen. Miasm generates our bilious fevers. A district or town is infested with these diseases, and presently the stomach and bowels become more than ordinarily involved; and in diarrhœas suddenly the disease assumes a new phase; cholera, that affected the people slightly and for a period without a single malignant case, suddenly assumes an aspect of mortality. Can we here doubt, that there has been a period of incubation? and the process being accomplished, like bursting bubbles the poison becomes extinct, and is dispelled upon the winds in a short period of time.

It may be that the same modification of the atmosphere that forms the choleraic influence, while it operates to the production of the choleraic disposition, may also operate upon the ordinary miasm, so as to modify that malaria which usually produces fall fevers. Common ratiocination shows us that there is a widely diffused choleraic entity, and the visitation in miasmatic localities of that disease, in the season that is wont to exhibit bilious fevers, shows that the common miasm is not present in its common character during the presence of epidemic cholera. Again, cholera is seen to prevail almost uniformly for some weeks in its mild garb; this stage is acknowledged generally as "the beginning of cholera." Suddenly

we have a blow out of *cholera lethalis:* What can be the cause of this? Surely there is some alteration; not in the general atmosphere, as we may judge; for this, as far as we can see, has been the same ever since the advent of this pestilence; but cholera having assumed the place of miasmatic fever, shows that there is a change in the local malaria. If this be a fair exposition of the phenomena, it follows that there is a general cause ever the same, wherever recognized. We may also recognize a local cause presenting entirely new features, and we have a new disease. Have we not good ground for the opinion that there is not only a co-operation of those morbific entities, but a union of action? and hence we derive our belief in the reality of the cause of cholera; and this brings us to declare that there exists in its mild forms a grand atmospherical contamination; but *cholera lethalis* or asphyxia arises from a compound cause, and this is what we term a *dual cause*—dual, because it comes under our recognition only where there exists a local choleraic entity, and it is only when this local morbific entity comes into affiliation that we have epidemic cholera.

INFLUENCE OF ALTITUDE.

We have elsewhere given some account of the cause of yellow fever operating in the lower stratum of the air, and the escape of people who resided above in health; and there is such manifest similarity between the cause of yellow fever and the high grades of common bilious fever, that there is ground for believing that the ponderosity of the two will be nearly similar, and as cholera appears oftenest in locations in which yellow or other epidemic fevers sometimes exist, there is scarcely any room for doubt that the several forms of disease just noticed, are the offspring of a poison nearly akin. Indeed, they are sometimes blended, as we have already noted; there can therefore, scarcely be a doubt, but that the fomes of cholera exist only near the surface of the ground; and it may

be remarked, that in its malignant aspect it has mostly a shorter duration than yellow fever fomes.

We entertained this opinion ever since the appearance of cholera in Baltimore, in 1832, and are happy to see it corroborated by observations made in London. (See London Lancet.) "It was discovered during the epidemic cholera of 1848–9, in London, that the rate of mortality by the disease was nearly in the inverse proportion of the elevation of the ground on which the dwellings of the inhabitants stood. The same relation between the rates of mortality at different elevations, though the deaths have been comparatively few, has been observed in the present epidemic (1854)." The account goes on to give the different elevations of districts, from twenty feet to a hundred, and at twenty the mortality was seventy-one in 100,000 inhabitants; at one hundred feet the deaths were but three on a space equal to that of the first elevation. "At Hampstead, where the elevation may be put down at 350 feet, there has been hitherto no death from cholera." And the inference is drawn, "that the danger of dying of cholera, and of all plagues, diminishes within certain limits in proportion as the dwellings of the population are raised above the level of the sea." The present writer advanced this opinion at the meeting of the Medical Literati at Hamburg, in 1830, in relation to yellow fever; and time and opportunity have served to confirm that opinion with us. In the epidemic of London, 1854, the foregoing opinion has been confirmed in its fullest extent.

We quote again from the London Lancet. "The mortality from cholera to 100,000 living at the three elevations, is 287 at the lowest, at the middle 109, and 32 at the highest elevation." With facts as our guide, we may generally safely rely on the conclusion to which they point; but the history of the protean disease before us, is ever presenting new phases, so that here, as in most things characteristic of epidemic cholera, we may look for vagaries, but if we can rely upon this feature of the malady, we will have gained a point of much value; and the prophylactics which may thence be derived are too obvious to need enumeration—people in all conditions

of life may avail themselves of prevention, by elevation, both in their houses and terrestrial locations; and the removal of the people who occupy low houses, in low localities, will be more benefited by early removal at an outbreak, by putting them on higher grounds, than by endeavoring to smother it amid the filth and confined air, by measures of seclusion.

OF THE CHOLERA IN PARIS—1853.

"The first case in Paris, occurred on the 11th of November. Since that time several other patients, male and female, have been admitted into the different hospitals. Moreover, there have been observed some cases disseminated in the 9th and 11th arrondissements. Some died; others, when heard of, were in a dangerous state;" and it is said—"Premonitory diarrhœa was a constant phenomenon." This phenomenon is of too much importance to be overlooked, and cannot be too much insisted on as being in reality incipient cholera, standing out as the harbinger of a near approach of a malignant stage—which stage can be warded off in almost all instances, and this gives support to the opinion which we have already advocated, that cholera is the offspring of a principle inherent in the stratum of air we breathe, and, though endowed with the quality of ubiquity, is unequally dispersed and incapable of generating cholera, except where it affiliates with some other effluvium, or morbific agent. If exceptions, in regard to these premonitory disorders of the primæ viæ, are now and then seen, this does not invalidate the general law, and we must call to mind here, that exceptions abound in the symptomatology, and in the treatment of all diseases changes are required; if this were not the case, we might expect to reduce medical acquirements to a simple art—viewed as a science, we see constantly errating signs which baffle systematic codification. We aim at writing an American book, and, therefore, do not deem it necessary to call up anything peculiar to France, except the important fact of universal premonitory diarrhœas in choleraic locations.

ON THE USE OF COPPER IN THE TREATMENT OF CHOLERA.

Amid the necromantic modes of medication in cholera which has abounded in all countries, as though it were a spell to be arrested, or disarmed of its power by charms, we read in the London Lancet, of the power of copper as a prophylactic and as a medicamentum. This article never having been introduced into general use, we shall in noticing its remedial agency speak of it, as of all other remedies when used as specifics. Certain it is, that cholera is a disease so diversified in its phases, so erratic in its general character, that it must be treated in its individuality. There is variety in the symptoms, differences in constitution and habits of its victims—differences in seasons, locations, idiosyncrasies; besides, the different stages of the malady are so dissimilar, that no disease requires more care and skill clinically, than this protean disorder.

So far as we recollect, the opinion that metals must be oxidized before they will dissolve in an acid, has not been denied, as advanced long since by Lavoisier. If this be admitted, how is copper to act upon the human body, except by oxidation and suspension in the air, or through the medium of electricity? Dr. Bury, the author of the metallic practice, denies that electricity has any agency in the case, but believes that it is hurtful wherever applied. This is a point not easily explained or decided, but it seems reasonable to attribute any influence which copper may be known to exert, to electrical influence. There is a similarity in the law governing electricity and the choleraic principle—both are seen to have their special and localized operations, and yet are clearly endowed with ubiquity. It is due to Dr. Bury, to say that he tested, as he reports, the preventive power of copper, in Sweden, Austria, Russia, Turkey, and England, with great success as a prophylactic; but in these experiments there is great uncertainty in making conclusions, for in a vast majority of instances in the localization of cholera, a large portion of

the populace will escape, or, at most come off with attacks, of more or less severity, short of the malignant stage of the disease.

NOTICE OF THE EMPLOYMENT OF SULPHURIC ACID.

In the London Lancet, we notice some remarks, which we deem remarkable, considering the high source from which they emanate. "Some have died with sulphuric acid, and others have recovered where the same remedy was used." This is no more than what we may expect in all diseases, whether left to nature or under treatment. "Calomel and opium, in small and large doses, have also given various results." In a disease so herculean when arrived at its acme, we can only hope to cure a small part of the sick, and the adaptation of remedies by our clinical skill is all we can hope for—still, there is consolation in the opinion, which we believe to be well founded, that those physicians who go to the bedside having little prejudgment, except a general store of knowledge appertaining to the disease and its sanatives, so far as known, will save more of their patients than by the empirical employment of this or that means. Such is our view of the subject before us, and this seems a proper place to refer to what is closely allied with practice by specifics, viz., that too much attention has been given to the fluids, especially the blood, to the neglect of the various secreting apparatus. We feel well assured of the importance of the relative vitality of the blood, and that this is the medium through which death may be said mostly to finish his work; but even here there are exceptions. We have seen cases in which death came principally through the grand sensory, as seen in deadly spasms, both before and after collapse; and here the grand remedy is bloodletting, carried as far as is necessary totally to subdue the spasms. We speak here with some qualification, agreeably to the creed that we have laid down, which is, to cull our knowledge at the bedside, where we must always look for contraindications, and even then we are but feebly armed, not "twice." We are pleased to see the writer from whom

we have just been quoting, conclude his observations thus: "We have seen trials with the sulphuric acid, calomel, and opium, stimuli of various kinds, of artificial heat, hydrocyanic acid, saline injections into the veins, ice, &c.; but our impressions remain as before, viz., that the best mode of treatment must be the one which is founded on sound therapeutic principles, the principal symptoms being combated in turn."

We deem it proper, before we dismiss this article, to express our regret that the writer before us should have expressed strong doubts about the non-contagiousness of cholera. "Among these (meaning other patients, it is said), we may mention a girl, aged twenty years, who came to the hospital. She was attacked with cholera, and died in twenty-four hours. Also, the case of a sister, at Bartholomew's Hospital, who had attended the cholera patient, under the care of Dr. Burrows, with great care and solicitude. We well recollect that she gave us, with much earnestness, full details touching the patient just named, who had succumbed to the complaint, and soon afterwards she was attacked herself, and died in a few days. We are not contagionists, but must confess that this looks very much like immediate transmission." Not contagionists, and yet believe in the immediate transmission of the disease, or rather the cause of it being transferred from one individual to another. Can we, with any semblance of reason, admit two specific poisons into our etiology for the production of one and the same disease? The predisponent cause of cholera was present in the city, and it being now here and now there, did not leave room to believe that the hospitals would be exempt more than other places, except so far as there was greater purity, which would shut it out; but it is one of the characteristics of cholera to flit from place to place, not that we mean there is any removal, except so far as the loco-topical malaria, on the lower stratum of the air, may be wafted by the wind. But, again, the girls spoken of no doubt went into the hospitals with the disease in the state of incubation, and the disease occurring in the hospitals, was no more than what might have been seen in a common intermittent. Had those girls been exposed to the miasm of marshy grounds, and

come to the institutions before the disease was developed, intermittent fever would have occurred just the same as did the cholera. To us there is not a doubt but those suspicious cases of contagion were nothing but coincidences; but we may well suppose that the new circumstances in which these females were placed would lead to increased predisposition, or rather operate as exciting causes do: going into a public institution is no plaything to females; the air is different, the food is different,—all these and other things would conspire to produce cholera upon persons who had been previously subjected to the influence of the choleraic cycle, which has existed in London since 1832. The occultness of the choleraic constitution does not prove its non-existence, and, indeed, we do not see any other way in which we can account for the erratic character of the sequential disease, and we have only to look to the laws of electricity to see that, in its intrinsic nature, it was present, but gave evidence of its presence only by occasional manifestations of its existence, as is seen in the exhibitions of its power: the visible motor power of the latter seems to arise from regular laws of modification; but the former awaits combination. A new and congenial material rises up, now here, now yonder, and the governing principle models the *materies morbi* into a new form, and the new compound poison usurps the place of ordinary miasm; and where, in former time, bilious fevers were wont to prevail, we have cholera, which we believe to be really but a modification of the olden fevers.

There seems to be some difficulty in accounting for the occurrence of sporadic cases of cholera, under circumstances where there is no evidence of exposure to a miasmatic material. In ordinary fevers, the miasm of which must be a specific matter in the air, certain viscera become deranged in their functions; there is, therefore, room for believing that the morbid products of the vicious secretions are in some degree fortuitous—we mean that the secreted matters are not precisely of the same quality at all times, but certainly they will not disseminate contagious matter. We apprehend that the ingesta may, from defect of the digestive function, give rise to morbific material in the alimentary tube, and thus beget a foundation

for the production of cholera, where the choleraic principle is present, and where not present we shall have cholera morbus or fever; but, of course, such a state of things could never occur epidemically. But fevers, the product of ozone, we have no doubt do sometimes happen in this way, and this view accounts for the occurrence of sporadic cases of summer fever appearing in the winter, when no general diffusion of the febrific fomites can exist out of doors.

Is there not good reason for believing that bad food, or too free use of that that is better, does often produce fever with all the signs of our autumnal fever, and requiring the same treatment for their cure, and are often replete with danger? then, if we admit that miasm is the cause of certain fevers, and if this obtains with common fevers, we may safely conclude that the same will obtain in cholera under like circumstances, that is, the fomes may be generated within the body, and produce fever—common fever, under ordinary circumstances—cholera, should the choleraic principle or predisposition be present. That cholera is the product of something that did not formerly exist is too manifest to be doubted; but it seems to be overlooked that the exciting cause may be fortuitous, so far as the disease occurs sporadically,—thus fear, inebriety, exposure to cold damp winds, and other things which might be mentioned, excite cholera; but this can only take place when a specific cause is present, which we suppose to be an occult principle of an electro-chemical compound.

This view of the subject enables us to explain how it is that certain articles, innocent in themselves, may, during the appearance of cholera epidemically, produce cholera so immediately after their use, as to leave no doubt of their deleteriousness. This was a phenomenon occurring so frequently in Baltimore, in 1832, as to satisfy almost every observant person that fruits and vegetables did give rise to the disease in all the forms of its malignancy. A person in perfect health, as to bodily feeling, but generally (perhaps always) under the influence of more or less diarrhœa, has often been seen to be overtaken with violent spasmodic pains, and when cholera was brought on in that way, however violent, copious bloodletting

was almost a specific; but to make it efficient, it was necessary to carry the abstraction of blood to complete arrestation of the pain. In a foregoing part of this work, we have detailed some remarkable cases of this sort.

Can we avoid believing, in these cases, that the choleraic principle is present and ready to be roused into action? This originates the question, how the true cholera is occasioned? That there is a universal choleraic principle co-extensive with nearly the whole terrestrial world is certain; or, call it what you will, there is something new, which has quality, duration, uniformity of character, and destructiveness, and, although to a certain extent ever changing its phases, that phase, viz., its variableness, may be considered a fixed law in the governance of this pestilential entity. It is seen that miasm is the parent of common fevers, and that, as regards localities, there is a kindred being; but these fevers are ushered into being by various exciting causes, and in the cholera there is good reason for supposing that there is a possibility that things present in the body, not exactly the same at all times, may produce the disease, owing to the chylopoietic viscera having a condition impressed upon them by a strong choleraic influence. In these circumstances, we have a predisponent cause, or susceptibility to a disease, which characterizes the disease according to the nature of the cycle existing in the atmosphere; hence it is that, in influenza, acknowledged to be the offspring of some vitiation of the atmosphere, the subjects of the disease, who have had, or have any chronic disease, or any part of the system known to be comparatively weak, are sure to feel the force of the disease in that part, whether general or local, although the case presents the symptoms proper to the disorder.

Once more, we believe the choleraic principle, constituting the present cycle of morbific aeriform influence, operates in a slight degree upon every human body, and, by its presence, begets a feeble susceptibility, which cannot give a morbid impression upon the living economy until the system is, so to speak, invaded by a certain malaria, or some internal degeneration of the ignesta, or some impairment of the secretive functions; the choleric predisponent will give form to the disease,

and that disease will probably be in more or less force, according to the thing co-ordinate with the choleraic impression, or with that of the exciting cause, or sometimes influenced in its individuality by both the remote and exciting causes. In small-pox we see strong congenital predisposition or susceptibility, which has no impairing influence upon the healthy economy; but the disease, having once traversed the system, with very few exceptions, destroys the variolous susceptibility, and exemption has been secured. What idea can we form of this wonderful phenomenon? The pustulation seems to produce the exemption which follows, and seems to give some support to the ancient notion of concoction, by which the system is purged of some peculiar principle or thing in the animal economy.

We are not prepared to say how far the same relative condition of matter belongs to cholera, but so far as our observations have extended, and our recollections serve us, there has been but little attained on this branch of our subject; there is, we think, some similarity. We have not seen, in many hundred cases, one second attack of cholera. There is, however, a striking difference in this. The system, as regards susceptibility to small-pox, is congenitally impressed; whereas, cholera has quite a modern existence. With this difference, we ask, how stands small-pox and cholera relatively to the vaccine disease? We do not feel prepared to offer an opinion here, affirmative of the substitution of vaccine for small-pox exerting an influence favorable to the production of cholera, but certain it is, some new element or principle has risen up, and it would seem that the *tout ensemble* of our knowledge respecting all things connected with the modern pest, shows that the predisponent to the extension of it is omnipresent. If this view be admitted, it will follow that all the speculative views about its being extended by contagion, according to the course of trade, in different countries, or transported from port to port in any one country; or of its coming and going, or its migrating from one country to another, irrespective of a universal pestilential principle, are without foundation, or, rather, founded in error.

We have elsewhere noticed some instances of deadly spas-

modic pains occurring in several cases during the existence of epidemic cholera, so immediately after eating certain articles, that there was no room for doubt as to the article taken being the cause of the ailment. In these instances of seizure, there is strong reason for believing the morbid impress is made by direct disturbance of the nerves of the splanchnic system. This system is then in a state of incipient lesion, which lesion is the result of choleraic disturbance, and it would seem as if in these cases, the ganglionic centres, with their connecting nervous cords, have been primarily deranged in their functions; for, as far as we have seen these cases, we have elsewhere noticed as being exceedingly violent, bloodletting would cure, with the co-operation of little or no aid from other remedies. Upon the whole, although we are aware of the paramount involvement of the blood, and its more immediate associated apparatus; still we believe that there is not only a close link between the sanguiferous system and the nervous, but that in some of the more sudden and painful cases, the nerves of the viscera are primarily involved in the disorder ushering in cholera; and here we see reason for reprobating all attempts at empirical treatment of a disease, the characteristics of which may be said to be almost indefinitely diversified.

OBSERVATIONS ON CHOLERA AT YORK, PENNSYLVANIA.

On the 26th of September, two persons were attacked with symptoms of cholera in the night. A woman, aged about thirty, and her brother, aged eighteen years, were overtaken about the same hour, quite early in the morning, with profuse diarrhœa. A physician was called in early in the morning, when symptoms of the disease were already present, in the form of cholera lethalis. He directed the free use of cold water and ice, and small doses of chloroform later in the day. We were called into consultation in the afternoon, with three other physicians, and found the patients in the stage of profound collapse. Our proposal for giving table-spoonful doses

of Sp. Turpentine, and the external application of melted hogs' lard was adopted; and the turpentine repeated once in two hours. This somewhat abated the diarrhœa, and increased both the warmth of the body, which was at a great extreme of coldness, and the force of the pulse, in a few hours. In the evening, we had very slender hopes of the possibility of recovery; but they both died in the course of the night.

At quite a late hour of the night, their relatives, in considerable numbers, were assembled, and sat up in the house where lay the dead bodies. One of them, a man who, it was said, was afraid of catching the disease, drank freely of some alcoholic drinks, so as to become alarmingly intoxicated. The mother of the young man wiped the sweat from his face, and afterwards wiped her own face with the same handkerchief. Many persons visited the house, and there was a pretty large funeral, yet not one individual was infected; although in a day or two after the death of these individuals, one woman and a young man were seized with the cholera, which soon ended in death; and a nurse who was with them, using great exertions, and losing sleep, was attacked, and also died of cholera. This last case, no doubt, had the same origin as that of those who died previously.

The town of York is built upon a site somewhat ascending. There is a small river coursing along on the west and north sides of the principal part of the town, but running through part of it, and there is a street, called Water Street, which runs some distance along the margin of the river. Water Street is lower than any other part. In this lower street occurred five cases of real cholera, and they all ended fatally, and were the only ones that assumed malignant symptoms during the season; but there was, at times, a good deal of diarrhœa and dysentery, so considered, but, no doubt, they were incipient cholera, in the form of cholerine and cholero-dysentery. The first two cases occurred at the north end of Water Street, and the other three at the south end, more than two squares distant, and where there was no intercourse between the two families. We did not attend these cases.

The borough of York is a healthy location, but it is slightly

subject to what we prefer to call bilious fever. What there is of that disease, is more frequently seen along and near Water Street than any other part of the town. It seems in place here to notice, that the climate or meteorological condition of the place is somewhat peculiar—the people being more subject to rheumatic affections and neuralgia, than obtains generally in this country; and we do not see that it is attributable to the sensible signs of the weather, but, we think, rather, there is a sort of endemic morbific cycle prevailing. How long this may have existed, we are unable to say. Here, again, we may well insist that the things which appertained to those five fatal cases of cholera, are utterly irreconcilable with the notion of contagion, in any form or degree; and the smaller fields for observation in cholera, are more clearly open for decisive opinion than large cities.

Before we conclude our account of York, we have to notice that there were several cases of fatal cholera in the surrounding country. In a neighborhood, five or six miles from the town, there was a considerable number of fatal cases of cholero-dysentery, mostly children. In a few instances, several died in the same house. Several physicians were called into the neighborhood, but were all alike unsuccessful. How it was treated, we are unable to say, not having seen any of these cases.

We shall conclude our observations on York, for the present, by the relation of one case of cholera, that was arrested at the "very nick of time," by active treatment. David Williams, was an employee on the railroad between York and Columbia, distance ten miles. He had been going, during the epidemic, to the latter place, but the cars stop at the edge of the town, and his business did not call him into the town. On the 9th of October, we were called to see him at 12 o'clock in the night. His first remark, upon going into his room, was, "Doctor, I believe I am getting the ague, I am so cold." We we were informed that he had come home well, and ate a hearty supper, and went to bed early; but soon afterwards, about 9 o'clock, he was seized with purging and vomiting, and his wife said it seemed to her, that from the beginning till now, half

past 12 o'clock, there had not been five minutes that he had not been purged or vomited. The surface of his body was as cold as marble, his pulse frequent, and very feeble; tongue coated brownish-yellow; prostration great; voice feeble. Here was clearly a true case of cholera. We prescribed one scruple of protochloride of mercury, and five grains of opium, divided into three pills, one to be taken instanter, and repeat every hour. Drink nothing but small draughts of green spearmint tea. The first pill speedily arrested the vomiting and purging, and he soon slept; but the pills were given, according to directions. In the morning, we found him much better, but very weak. Not the least stupor, or other sign of his having taken opium. He was conducted rapidly to health by the use of an alkaline mixture, described in different parts of this work, composed of ʒj. Subcarb. Sodæ, 6 drops of Ol. Sassafras, 60 drops of Laudanum, and pure water, ʒvi. Tablespoonful doses every two hours. In four days he resumed his business.

We deem this case important, because, as far as we have seen, we believe, in like circumstances, stimulants would have been resorted to by many practitioners, on account of their possessing supposed specific choleraic virtues. Directions were given to observe extreme caution in the use of solid food for a few days. His wife was all attention, and he was visited more by his friends than we approved of, and yet, unlike any marvellous spread of the choleraic nothingness, that is thought to be dispensed by the sick, or left behind by the dead, no one suffered. Could anything more utterly absurd occur, than to have subjected this man and his family to any sort of seclusion? Yet it has been countenanced by Dr. Carlton. When one of the physicians in Sweden says, "whatever difference of opinion there may be about shutting cholera out, *all are agreed that we should shut it in.*"

CLIMATE OF SOMERSET COUNTY, PENNSYLVANIA.

We deem it within the proper scope of our subject to bring into view the meteorological condition of Somerset County,

Pennsylvania, a district of country between the Alleghany Mountains and Laurel Hill, which district has some resemblance to the constitutional character of the atmosphere of York, as it stands related to the human body. We are aware that we use the term meteorological constitution in a sense somewhat new, but we consider the atmosphere as having its occult qualities, as well as those recognized in its sensible signs.'

The town of Somerset is surrounded by a country tolerably level, and at a great height above the shore of the Atlantic; but the mountain boundaries on the east and the west are elevated considerably above what may be termed a broad valley. The winter is longer, and sometimes more severe than it is on the east or west side of the mountains. The principal products are potatoes, flax, field peas, and oats; wheat does tolerably well, but rye is more congenial to the climate and soil; maize does not ripen, peaches cannot bear the season, apple-orchards sometimes bear, but the trees become covered with long green moss, which, at a distance, in winter, gives the appearance of pine or cedar. When quite young, we practised medicine two years in Somerset, and we never saw a case of intermittent or remittent fever which originated in Somerset County. At Cumberland, thirty miles distant, and eastward of the Alleghany Mountains, bilious fever prevails. One gentleman, who had suffered long at Cumberland, came to Somerset with an unconquerable ague. In a few weeks, with some mild treatment, he regained fine health, and became a resident of the town of Somerset, and had no return of his fever.

There are large glades, which abound in fine grass, and in other parts of the country there are several fine forests of valuable pine timber. The seasons are liable to great changes. We once saw the thermometer in the shade at 97½°, and we saw ice as thick as a case-knife, in a meadow, in the month of August; and, we believe, slight frosts are to be seen every month in the year. We shall pause here, and have only to say further, that the meteorological condition of the atmosphere is different from that of any other part of the Middle States; but in respect to any prevailing morbific influence of climate, there is a similarity to that of York County and town.

Rheumatism was common when we were at Somerset, and also hypochondriasm; but, in two years' practice, we never saw a case of fever, excepting such as were symptomatic of some bodily injury. This is an important fact, because it corroborates the opinion that morbific cycles or constitutions exist under different modifications. Thus we see that, in many locations throughout the United States, miasmatic diseases prevail in different degrees, as well in respect to more or less severity as to the amount of cases; while, at Somerset, the people are wholly exempt from all such diseases; in York, though bilious affections exist in the summer and fall months, still, comparatively, "they are few and far between." All these facts have an important bearing upon what we are very anxious to prove, that, as is the aerial constitution, so will be the diseases; but it is necessary, in examining this subject, to bring into view, that bilious maladies are produced by things visible, while others are occult, and only to be known by their results. Thus we see that even rheumatic affections have, so to speak, their predilections; or in other words, are under some occult influence; while epidemic cholera, although wide spread as the inhabited world, thereby shows that the usher of the disease is but a predisponent cause; otherwise, it would depopulate the whole world, were its usher a virulent contagion. Its power, though universal, is feeble and unseen, and like the electrical phenomena that sometimes come before us, alike invisible and mild, until roused into action, when it shows a power altogether resistless. It will be perceived here, that while the term *constitution* applies equally well to permanent peculiarities of the atmosphere, as to those that are in some degree periodic; the term *cycle* can only be applied to the latter condition; and again, permanent morbific or sanative conditions establish climates.

ATMOSPHERICAL OZONE AND CHOLERA.

"According to Professor Schönbein, the discoverer of cotton-powder, a complete absence of ozone has been remarked in the

atmosphere of Berlin during the invasion of cholera. Dr. Bœckel, of Strasburg, informs us, that in that town also, the presence of cholera coincides with the absence of ozone—that ozone reappears as soon as the epidemic has decreased.

"Dr. Billiard, of Corbigny, is of opinion, the diminution of ozone in the atmosphere is the first cause of cholera, and that this modification of the air brings forth a change in the animal organization, in consequence of which, the liquids contained in certain vessels, and the substance contained in the digestive tube, are withdrawn from vital action, and only remain subject to the forces by which inert matter is ruled.

"Thus the production of putrid fermentations, the disengagement of gases, and other physical phenomena, by means of which, according to Dr. Billiard, 'all the morbid symptoms of cholera, from its period of incubation to its fatal or favorable termination, may be explained.'

"What is ozone? To this question we will endeavor to give a comprehensive answer, as the subject is well worthy attention, and its assiduous study, added to daily meteorological observations, promises to be no less interesting to the physiologist and pathologist than it is at present to the chemical philosopher. Ozone is nothing else than oxygen itself, but so different from the body to which, since Priestley's discovery, we are accustomed to give the name, that it has been extremely difficult to find out its real nature.

"Oxygen has no smell. Ozone, on the contrary, has a very penetrating odor, resembling, at the same time, that of chlorine mixed with air and of phosphorus or sulphur in combustion. It is the odor that manifests itself after repeated electrical discharges. The new permanent qualities acquired by oxygen, when it changes into ozone, is not confined to its smell alone. Its oxidizing power is much greater than that of common oxygen. The latter combines only very slowly with mercury at an ordinary temperature; the former, on the contrary, unites itself very rapidly with this metal.

"Van Marum was the first who found this remarkable body, in 1785. Having at his disposal the great machine of Tayler's Museum, he excited sparks in a tube filled with oxygen. After

five thousand sparks, the oxygen had acquired a smell, 'which seems to us,' says this natural philosopher, 'to be clearly the smell of electrical matter.' From 1785 to 1840, these remarkable experiments were completely lost sight of; but, in the latter year, Professor Schönbein, while decomposing water by a galvanic battery, remarked that the production of oxygen gas was accompanied by a peculiar smell, and published a paper on this subject. What was this new body? A simple one, or a composition of oxygen and hydrogen or azote? The ingenious chemist left the question undecided, but gave the name of ozone to the odorous substance.

"Eight years after, Mr. Williamson, a member of the Royal Society of London, pronounced, that as ozone is produced by a galvanic battery, developed by the electrical spark, or brought forth by the action of the air or phosphorus, it is a hyperoxide of hydrogen and azotic acid, or a mixture of the two. Professor Schönbein had, meanwhile, continued his researches. In 1850, he expresses an opinion that azote is a highly oxygenated combination of hydrogen. In 1851, Messrs. Martignac and De la Rive came to the conclusion, after a series of experiments, that the ozone is nothing else than oxygen in a peculiar state of chemical activity impressed upon it by electricity. Berzelius and Professor Faraday also believed in a simple modification of oxygen in an isomeric or allotropic state of the body.

"Professor Schönbein, taking up the question a third time, ranged himself, in 1851, to the opinion of Martignac and De la Rive. Most chemists, however, still hesitated to admit the modification of oxygen; but the experiments published in 1852 by Mr. E. Fremy and Edmund Becquerel, seem to have removed all doubts on the subject. Thus, ozone is only a peculiar form of oxygen produced by electricity,—a change analogous to that which the solar rays bring forth in chlorine by rendering its affinities more powerful, or to the modifications which are excited by heat in sulphur, phosphorus, and carbon.

"This fact having once been admitted, the question naturally arose, whether the changes we bring about in our laboratories are not produced spontaneously in the atmosphere?

and this was very soon affirmatively answered. Since 1850, Professor Schönbein had ascertained that ozone decomposes iodide of potassium, and concluded that the best reagent for finding out the presence of ozone is starched paper containing a small quantity of the iodide. Paper thus prepared and exposed to the action of the atmosphere, soon revealed the presence of ozone. But it was evident that this singular body could not always be contained in the air in the same proportions, and to study these variations a scale must necessarily be found. An ozonometrical measure easily was established by dividing into ten shades the chromatic intervals between the absence of ozone, which is white, and the deepest color which this substance can possibly bring about by decomposing iodide of potassium. By means of this scale, the daily variations of the atmospheric ozone may be ascertained in the same manner as those of the temperature and weight of the air indicated by the thermometer and barometer.

"Dr. Bœckel makes the following remarks: In summer, the ozonometrical mean is, according to my observation, constantly more considerable during the daytime than it is at night; the ozonoscopal paper being exposed from morning to evening to two maxima of electricity, while, during the night, the reactive paper only traverses one maximum period, which is between two and four in the morning.

"In winter, the inverse seems to take place; the electrical affinities being then most likely energetic, in consequence of the absence of the sun, although experience seems to have proved that a greater quantity of electricity is produced in winter.

"During a fog, the ozonoscope frequently marks zero, as only the rapid formation of vapors, or their precipitation in rain or snow, is accompanied by a disengagement of electricity. This took place during the last four months of last year, which were frequently foggy. The ozonometrical mean of these months has constantly been inferior to that of the remainder of the year.

"Thus, we have here a body, the existence of which was not even suspected a few years ago, and which never ceases to act

upon us, and upon all animated nature. As to the intensity of its action, it cannot be doubted; for who can question that considerable variations in the oxidizing power of respirable gas has a powerful influence upon respiration, and, consequently, upon all the vital functions?

"According to Dr. Bœckel, malaria always shows itself with the zero of the ozonoscope, and the same takes place when intermittent fevers are present.

"According to Professor Schönbein, a considerable quantity of ozone was observed in the atmosphere at Berlin during an epidemic influenza, and under a medical constitution predisposing to pulmonic affections, and the contrary took place under the reign of a gastric constitution. Finally, as we mentioned at the head of the article, the cholera coincided with the absence of atmospherical ozone."—*Medical Times and Gazette for* 1855.

COMMENTS ON PROFESSOR SCHÖNBEIN'S VIEWS OF OZONE.

The first paragraph in the foregoing paper announces, as the positive result of the observations of Professor Schönbein at Berlin, and Dr. Bœckel at Strasburg, that the presence of cholera "coincides with the absence of atmospherical ozone." Can we rely on this as an invariable phenomenon? We have seen that, in 1834, cholera and yellow fever prevailed to a considerable extent at New Orleans epidemically at the same time, and more or less of this has been seen in other places. We have endeavored, in the body of this work, to show that the first branch of the cause of cholera has the quality of ubiquity; that that elementary principle is most likely a modification of electricity; that its influence begets a predisposition to that disease; but for the production of cholera in all its phases, a second specific entity is requisite, probably allotropic. The union of these entities forms a dual malaria, and hence it is, that while we see a choleraic constitution existing, which is manifested in various ways, *cholera lethalis* comes suddenly,

but never remains for any great length of time. Having done some bad work it departs; but soon we hear of its invasion of some other place, and in unmeasured time it comes again; and these movements are so erratic, and have existed so long as to show that the choleraic entity has become a fixed integral of the air we breathe. This entity may be viewed relatively to cholera as in a negative state, while some local, or personal entity, in a positive state, enters into union, and that union gives rise to morbific phenomena, viz., cholera.

We see from the wonderful discoveries of the distinguished chemists who are named in the foregoing paper, that wonderful advances have been and still are making, in relation to changes which take place in the circumambient air, and that some of these give rise to and control our diseases. That some changes were seen to occur from time to time has long been known by certain signs, as miasm, and other kinds of malaria, which give rise to epidemic diseases; and also, act sporadically; but we were compelled to place these entities as something occult. Advances in chemical science are gradually bringing things that were hidden to the light of scientific research. The luminaries who have advanced our knowledge, deserve the praise and highest admiration of mankind. But further advances are to be made before we can place our meteorological entities on a basis from which we can cull such material or practical knowledge as will give us true guides in practice.

We believe that the history, the nature, the symptomatology, the general character, the topographical preferences, the forerunners, the similitude to other diseases, and the therapiæ most reliable, form a combination which enables us to understand the disease and its treatment irrespective of chemical developments of the various principles or entities, which chemistry shows forth, but which, unfortunately, are subject to ever varying changes. Such has been the course of our studies from the first irruption of cholera in this country; how far we have succeeded in developing a true manifest of the above morbific ensemble the reader will judge.

Dr. Billiard, in paragraph first, alleges that there is a pre-

vailing atmospherical contamination which deranges the animal economy, and causes changes of the fluids so as to withdraw them, together with substances in the alimentary tube, from vital action, and subject to the forces of inert matter.

The same author in paragraph three, supposes that these changes lead to fermentations which produce gases that give rise to the train of morbific phenomena which characterize cholera. These views were adopted by us in greater part, in 1832; but more fully carried out in the body of this work, before we had known of Dr. Billiard's views on cholera.

Thus much we have thought proper to say of chemical researches and discoveries on the constitution and changes of the atmosphere, which, no doubt, produce and modify our diseases; but we regret to say that, as far as our direct therapiæ are concerned, we are yet but at the threshold of our inquiries. The subject is nevertheless replete with interest, but calls for exact discernment of chemists of extensive experience. In concluding our remarks on this branch of our subject, we wish to call the reader's attention to the following exposition: In ordinary epidemics, the general atmosphere only modifies our fevers, so as to give peculiar features in relation to sthenic, or asthenic conditions of the system, with some tendency to one or more of the most important viscera; and this condition of things only shows the existence of a morbific cycle; and the actual cause of the epidemic is from things visible to our perceptions, viz., the gross material which produces miasm. In this case the cycle does not give rise to the ordinary miasmatic disease; it only modifies and establishes its character. But in cholera, the atmospherical contamination gives character to, and controls the system in a peculiar abnormal condition; and when the systematic taint comes into affiliation with a peculiar malaria, a *dual poison* is produced, and thus is originated the disease known as cholera.

APPLICATION OF DR. SCHÖNBEIN'S VIEWS.

If the experiments of Dr. Schönbein, already noticed, at Berlin, and those of Dr. Bœckel at Strausburg, are to be relied on,

this new local malaria is changed from the form of miasm, being now deprived of its ozone; for which experiments, see the early part of the present article, pp. 251–2. Then as ozone is oxygen compounded with electricity, and we see our diseases changed during the absence of ozone, and our old-fashioned fevers present while ozone is present, we hence derive important information. The ozonometer will indicate the quantity of that article present; and as sulphur, but more especially phosphorus, in a state of combustion, affords a smell similar to that of ozone, may we not hope, by further investigation, to be enabled to correct the malaria of some of our almshouses, as seen at Baltimore and Boston, for instance, where the cholera has existed with appalling horrors. What might be the effect of burning phosphorus or sulphur, or a combination of both during the presence of cholera, with a view of introducing an air, which, though non-sanitary, might be preferable to the local choleraic entity, which must be present so long as the pest continues. We are aware that such a proposal is only to be decided by actual trial. It may be, that adding ozone to the air of the house, may not answer our purpose—Nature has her own laboratories; but her laboratories are far from being like those of the chemist. It is not likely that any evil would arise from prudent trials.

We hold that the cause of cholera has two branches; one general, and in the character of maternity; the other loco-topical, and in parasitic union. Over this morbific maternity we have no control; this is a product of a world-wide laboratory, and dwells alike in all places, being most likely a modification of electricity, and like it endowed with ubiquitariousness; and therefore wholly out of our reach, and out of our power, while the loco-topical congener is manifested in things visible. Thus specialities of locations can alone give prevalence to epidemic cholera; but institutional cholera and sporadic cholera are generated mysteriously, so far as we know at present. The loco-topical entity in such places probably arises in good degree from too much sameness in the diet, by which is produced a want of affinity between the ingesta and the grand tubular receptacle; and this may lead to intestinal fermentation or other

gaseous operations which shall give rise to peculiar formations, and thus create within the body the second branch of *cholera lethalis;* and to our apprehension, the parent branch is ever present, and has been so present in our country since the year 1832. Cases must be erected on a choleraic foundation, but may be originated in the same manner as common cholera morbus.

So far as we have observed, the condition of our comparatively crowded institutions, prisons, penitentiaries, and almshouses, the diet seems to contain too little of the bitter principle (see Paris), as well as too much sameness, and perhaps too little fat. If we are right in this opinion, occasional seasoning of food with orange and lemon peel would be both agreeable and sanitary, and other simple bitters; also some of the green, raw esculents of the garden. There is a seeming objection to this view in seeing, that these outbreaks of cholera take place, and again disappear, while the same course of procedure, as to the internal regulations, are still the same. But the human system is seen to have its recuperative power, and when assailed by violent disease, must either succumb, or the plastic forces presently assume the reign, and the pestiferous intruder is expelled. Unfortunately, however, in almshouses humanity comes broken down, either chronically diseased, or with their systems being ready recipients for morbific entities; they fall easily, but have little power to get up: but violent diseases even here, are only curable by active medicine. How vastly important that we as much as possible shut out everything hurtful; and that we bear in mind in the application of our therapiæ, that we have feeble stamina to work upon.

The mortality has been fearful in some instances, and further endeavors may possibly lead to better results.

PRESERVATIVE POWER OF COPPER IN CHOLERA.

"Dr. Routh read to the Medical Society of London a memoir from Dr. Bury, D. M. P., on the preservative power of copper in cholera. Dr. Bury is the author of a work on Metalo-

Therapica, and it was in carrying out experiments on this subject, that his attention was first drawn to this influence of copper. He first related a case of cholera which occurred in the Hospital Cochin, in which the external application of a copper band arrested cramps, and that unmistakably, as on the removal of the copper plates, the cramps re-occurred. He found subsequently, on inquiry, that workers in copper and brass were remarkably exempt from cholera. This was the result of a careful and personal investigation in nearly all the metallic workshops in Paris, in which from a hundred to six hundred (and over) workmen were employed. The individual workshops were given by name. In all these, the mortality never exceeded 5 in the 1,000, and in many it was actually null; and this in the midst of a neighborhood in which the population was decimated. Indeed, in many cases the wives suffered, while the workmen escaped. Dr. Bury was not satisfied with this result, but investigated the matter in other countries,—Sweden, Vienna (in Austria), Russia, Turkey, and England. In all, the same exemption was observed. In many cases, also, it was remarked that removal to a copper-mine, or even district, arrested choleraic symptoms. The exemption of Birmingham, Sheffield, &c., he explained in this manner. The individual cases so tested, in round numbers, amounted to about 300,000. A review of all these facts led him to conclude, 1st, That nearly all metals with strong electric affinities were in different degrees preservative; but of all these, copper and steel ornaments were most so—the mortality being almost null among workmen engaged in working these two metals. 2d. With a view of resisting cholera, he recommended the presence of copper and steel ornaments in rooms, as also plates worn next the skin on the body. 3d. In the treatment of cholera, the internal use of metals, especially copper, in powder, in the metallic states, as also the application externally of plates."

"These plates he calls armatures; these he prefers to the salts of metals. The memoir concludes with an attempt to explain these phenomena, which he did not believe to depend on any electrical or galvanic influences. Indeed, these he con-

siders rather noxious than otherwise. He suggested: 1. That in the production of ozone by phosphorus, an atmosphere affected by copper might be so modified that the cholera could not exist in it. 2. It might be due to minute absorption of oxide of copper by the skin and lungs, acting in a similar manner upon the system." (London Lancet, for 1853.)

We cannot imagine why Dr. Bury should ascribe the influence of copper over cholera to its chemical solution in the atmosphere, rather than to an electrical influence. In the construction of galvanic apparatus, we find copper perhaps pre-eminently suited to the giving full power to the machinery; and we believe it is a settled point, that ozone is a chemical modification of oxygen; and we shall hereafter endeavor to show that electricity is the medium by which the choleraic constitution has been extended over the surface of the earth, thus giving rise to an altered lower stratum of the air. And what shall we say to the fact, that "a copper band arrested the cramps, and that unmistakably, as on the removal of the copper plates, the cramps re-occurred?" How shall we believe that so speedy an oxidation of the copper could take place, and recur so immediately upon the withdrawal of the metal? But the phenomena present are readily reconcilable with the known laws of electricity, which is known to exist under various modifications, and, indeed, is seen to enter into chemical combination, as in ozone. The modus operandi is not so much a matter of importance as the fully established matter of fact in the case, i. e., that copper "unmistakably" has the alleged prophylactic quality. This report comes sustained by testimony which is entitled to our guarded attention, not to yield assent but with marked caution, nor leave a thing replete with so much good to mankind, if true, without a zealous endeavor to know it, as it should be known.

If the position which has been taken by Dr. Bury be established, results of vast importance may be expected in public institutions, with small expense, by merely introducing a few sheets of copper into the passages, or beside the beds of the inmates. We could not reconcile ourselves to the use of copper in the state of powdered metal, as a chief remedy

for cholera; but there may occur cases where our want of success, in an epidemic, may be so great as to warrant a trial of the copper treatment; but as we do not agree with Dr. Bury in the belief that the copper acts chemically, so neither do we believe the metallic powder to be the most reliable form of its exhibition. Upon the whole, we think the prophylactic power should be more fully established before we venture to make it a chief antidote in the treatment of *cholera lethalis*, and for the forerunners of this stage, we have medicines already quite reliable.

Copper has long been known as an article of our materia medica, and has been used as an astringent, tonic, and also as an emetic. We have sometimes used it, and we think, with much advantage, as a tonic, in protracted cases of syphilis, attended with great debility, in alternation with bichloride of mercury and other mercurials; and the reader may be aware that Cullen speaks favorably of the use of copper in epilepsy, in his Materia Medica. It seems proper, since copper in the form of subacetate is often formed in cooking vessels, to notice this metal as being readily acted on by acid fruits when cold; many cases of poisoning occur in this way. It is, therefore, important to know that sugar used quite freely, both in the dry and liquid state, dissolved in water is a safe and speedy antidote.

SUMMARY OF VIEWS OF THE PRIMARY CAUSE OF CHOLERA.

Among the wonderful contrivances of the world, there is, perhaps, none more wonderful than the polarity of electricity in the form of magnetism.

We see this modification of electricity, ever, like a gravitating force, tending to one point; and yet that very polar force exists over the face of the ground, as we see in the phenomenon, that the polarity of a bar of iron is changed by keeping the non-polarized end stuck for some time in the ground.

The amiable and gifted St. Pierre, in his Studies of Nature,

has offered some thoughts on the magnetic needle. We quote from memory. Speaking of the polar influence of electricity, he expresses the hope that the day may arrive when some other metal may be found to possess the quality of pointing to the east and the west, as the magnetized iron needle points to the north and the south. No such discovery has been made; nor has any attempts been made to find out a thing so unlikely, but desirable. We think there scarcely can be a doubt of there being some new modification (at least new to Europe and the American continent) of electricity, which has extended itself from the more eastern countries, and in its main course spread westward. Reaching our country on its northern border, it moved, south and westward, over considerable space; first near the Atlantic.

Such being the case, what other agent is there to which we could ascribe the appearance of epidemic cholera in its course? It is true electricity has the quality of ubiquity, but this does not interfere with its change of place, as may be seen in the operations of the telegraph. All the known laws of electricity in all its modifications, serve to give it fitness for the agency of spreading a subtle entity, like the entity which gives rise to cholera.

It is known that electricity is susceptible of chemical combination; and, a combination tangible to our senses is at hand to sustain our position, i. e., the oxygen of the atmosphere, the pabulum of our breath, so to speak, is inodorous; but ozone is fœtid, but the former may by simple electrization be converted into ozone, the acknowledged morbific entity of our autumnal fevers. Seeing then that we have agents whose fitness is every way suited to the production of the phenomena attendant upon epidemic cholera, and that there is no other agent which possesses a condition fit for the production of that epidemic, we think we have made a strong case—a case carrying with it proof, as strong as any that can be seen in proof of anything physical, which admits not of absolute demonstration.

But so far, we have only established a sort of maternity to the cause of epidemic cholera. The disease, in its primary spread

westward, showed itself now here, now there, now zigzag, again turning back; still, its most steady trait was its westward course; and its preferences for fever locations, or the crowded city; always showing its principal force in the lower portions of the surface of such districts or cities, in which it made inroads.

This choleraic maternity only gives rise to a feeble contamination of the air we breathe, and acts as a sleeping evil genius ready to be roused into mischief potential. Its affiliation with some other poison gives rise often, with slight premonition, to *cholera lethalis.*

Respecting this evil additamentum we know nothing positive, but, nevertheless, what we do know of it is highly valuable. We know that fever locations are made to give up their places, and that epidemic cholera for a brief space occupies their localities. Is this not proof that some change has taken place in the air? Ozone is supposed to be what has long been termed miasm, but we see cholera prevailing in cities wherein little or no bilious fever is to be seen; and, this too goes to show, that ordinary miasm is not the second branch of the choleraic entity; and accordingly, it has been ascertained that ozone is absent from districts affected with epidemic cholera. This only goes to show that there is a choleraic matrix which gives rise to cholerine and cholero-dysentery, mostly some weeks before *cholera lethalis* takes place.

Ozone disappears when cholera comes into an infested neighborhood; and according to the experiments of Drs. Schönbein and Bœckel, as cholera retires, ozone (at least sometimes) resumes its place again. This goes to establish the belief, that owing to the influence of the choleraic matrix, an unusual combination of the elements constituting the malaria of cholera occurs, and this new compound fomes is formed of the common elements of fever poison, the elements being differently combined.

The appearance of cholera in districts where fevers do not prevail shows that ozone is not a principal integrant of the *lethalic poison;* and, the constant presence of the choleraic matrix is evident throughout our country. The appearance of

cholera lethalis is sudden, and its presence comparatively brief. We here clearly recognize an affiliating agent or element. There is then an all-pervading maternity, as seen in the ubiquitariness of cholera poison, which is to be viewed as giving rise to a peculiar morbific constitution to the atmosphere; but for the production of epidemic *cholera lethalis*, there must be added something which has taken the place of the poison of fever localities, and this we term the immediate cause of cholera.

If the propositions which we have offered be admitted, we will have proved, that the primary cause of epidemic cholera is existent as the cause of the intestinal diseases which are seen, as "the beginning of the disease." For the production of *cholera lethalis* another cause is requisite; and as there is no malignant cholera without the primary and secondary cholera entities, we have made out our case, i. e., that there is a twofold or *dual* cause involved in the production of cholera lethalis.

The propositions which we here offer are not invalidated by the admission of the supposition, that the primary cause may be the efficient cause of the secondary. It only shows that the primary is always active, only, however, in moderate force, and it may tend to beget the secondary by affecting the material which is only an occasional material in the atmosphere, which becoming gradually embodied, is sooner or later dispersed by the winds, and probably is but of an evanescent quality.

Nor do our propositions invalidate the belief that many sporadic cases of *cholera lethalis* originate, as do cases of common cholera morbus, i. e., they are sometimes produced by *fortuitous secondary causes*. Every one knows that excesses of almost any kind in our food and drinks, may produce cholera morbus. But now that there exists a choleraic matrix in the general atmosphere, we may reasonably believe that, the ingesta disturbing the alimentary tube including the stomach, disease, so produced, may assume the new species of cholera in all its stages.

In support of the opinion here advanced we will briefly relate two cases. A few weeks ago, and at a time when there was

not to our knowledge a case of true cholera for several months in York, Pennsylvania, a man died very suddenly, with violent purging and vomiting, in the care of two or three physicians, who believed, from the suddenness of the death, that their patient had committed suicide. The body was opened, and nothing grew out of the post-mortem except that there was some large spots of deep redness in the inner coat of the stomach. A jury of inquest was called, and a searching investigation had to decide whether the man had taken poison, for which there was no ground, except the violence of the symptoms, and the suddenness of the death. Inquiry showed that the patient had been complaining from Thursday till Monday before the symptoms became violent. This man beyond doubt died of true cholera, at a time when the secondary cause, without which *cholera lethalis* seldom occurs, was not present; but, it was a case of cholera morbus taking on the livery of true cholera.

In the month of March, 1855, we were called to see a woman of hale, hearty appearance, and we found her in the last stage of collapse; and, she died in three or four hours after we saw her. She had been affected about forty-eight hours with all the usual symptoms of cholera; and the disease was at once taken by her physician to be a case of true cholera, for which no evident cause was known. She was a working woman of good habits; and lived in a neighborhood free from marshy grounds; but she was a near neighbor to a man who had the same disease severely the year before, but he recovered under active depletive treatment. Do not these cases go far to prove two things? First, that there was a choleraic state of the atmosphere—the other that the disease was excited by a fortuitous cause. And we may here repeat that, as these cases were single ones, the exciting cause was not specific; and, on the other hand, wherever cholera prevails epidemically, there must be a sameness in the poison, present to an extent comporting with the spread of the disease in each epidemic.

We cannot reasonably attribute these occasional outbreaks in particular places, to the great choleraic matrix alone, seeing it is constantly in the circumambient air, as we know, for more

than twenty years; showing itself often enough to declare its presence, but like flights of fancy, soon satiated with the possession of its objects, and being forsaken by its congener, its virulence is lost, and then succeeds the more moderate, but sure possession of a world-wide choleraic domain.

NOTIFICATION ISSUED BY THE ENGLISH BOARD OF HEALTH.

We consider the notification before us a valuable paper, and we are made happy to observe a most striking likeness between this publication made in 1853, and what we published in 1832, in our Medical Journal. When we shall have given a copy of the English Report, we shall refer the reader to some pages of this work in corroboration of this assertion.

"It is the painful duty of the General Board of Health to notify a third visitation of epidemic cholera. This disease again, first breaking out in Persia, has extended within the present year over a large portion of Russia, stretching as far northward as Archangel, on the shores of the Arctic Ocean; it has ravaged Denmark, Norway, and Sweden, and then developing itself in the north of Germany, it has attacked Stettin, Berlin, Rotterdam, and Hamburg, and subsequently it appeared in England, again breaking out on its northeast coast, in the near neighborhood of the town in which it made its first appearance in the country in 1831.

"In this wide-spread course it has everywhere overleaped the barriers which quarantine has erected to stay its progress; where this means of protection has been most rigidly enforced, it has not only disappointed the expectations of those who have relied upon it as a safeguard, but often to the neglect and exclusion of the most important precautions, but has aggravated the evils of the pestilence, and added disastrous consequences of its own.

"The experience already obtained of this pestilence at New Castle, Gateshead, and Hexham, is decisive that where the conditions are favorable to its localization and development, as

is the case in these towns, the disease has lost nothing of its virulence. In the two former, indeed, the severity of the disease, as far as it has yet extended, has greatly exceeded that of any former visitation, and it has attacked in all those places, as it has abroad, a much larger proportion of the middle and higher classes—(owing no doubt to the longer existence of the atmospherical choleric influence).

"It is deeply to be lamented that in the interval of the last visitation of this pestilence and the present has not been generally employed in effecting a larger amount of improvement in our cities and towns. From such inspections as the General Board have recently been enabled to make of the state of populous districts, the former seats of the disease, in apprehension of its appearance, they are compelled to state that there are extensive districts, and even towns, in which no perceptible improvements of any kind have been effected. On the other hand, there are instances in which, even where no works of improvement have been effected, better supplies of water, extensive flagging and paving, more frequent scavenging, and more active removal of nuisances in epidemic localities, have been accomplished. Combined and permanent works, involving elaborate engineering measures, capable of remedying the neglect of years, cannot be effected in a few weeks. But the consciousness of past neglect should stimulate to immediate and resolute exertion, that all which the time requires may be done that ought to be done. The results in some instances, even of limited and partial improvements, are highly encouraging. During the present epidemic at Hamburg, which has now been prevailing upwards of six weeks, only six cases of cholera have occurred in the improved parts of the city; and during the whole of the epidemic in the metropolis, in 1849, not a single case of cholera occurred in any part of the model dwellings for the poor, occupied by similar classes, though the pestilence raged in the districts in which the buildings are situated, and there were instances of two and even four deaths in single houses close to their walls.

"In towns where the greatest amount of improvement has been effected, and in which works under the Public Health Act

are most advanced, much remains to be done, and may be done. Local Boards of Health are invested under the Public Health Act, with ample powers for cleansing, for the removal of nuisances, for preventing the carrying on of unwholesome or noxious trades in such a manner as to injure health, for preventing the occupation of cellars as dwelling-houses, which on the certificate of an officer of health, shall appear to be in such a filthy and unwholesome state as to endanger the health of any person, until such houses have been properly and effectually whitewashed, cleaned, and purified; and for administering the common Lodging-house Act, the provisions of which are most important. All these powers should be exercised at the present juncture with extraordinary activity, vigilance, and stringency.

"But though it may be needful to prosecute the work of cleansing more vigorously than in ordinary periods, it should be done under supervision, and with extraordinary care. In removing accumulations of filth, precautions should be taken for disinfection, and for preventing the increase of evaporation. The contents of foul drains, sewers, and ditches, should in no case be spread upon the surface, and no large accumulation should be removed excepting under the direction of a medical officer. The escape of a noxious effluvium is far more dangerous in an epidemic than in an ordinary season.

"The evil of overcrowding, so general, not only in lodging-houses, but in tenements of all descriptions occupied by the poorer classes, especially by the Irish; an evil preventable, and to a considerable extent removable—should be at once and by all practicable means reduced.

"Wherever local Boards of Health exist, they should in all cases co-operate with the Boards of Guardians; and it is believed that the Boards of Guardians will, on their part, co-operate with local Boards. The existing means for the extraordinary service now required are divided among independent local jurisdictions; medical officers in England and Wales being under Boards of Guardians; works of sewage, and cleansings in towns not under the Public Health Act being under Town Commissioners, acting under local acts, and the

enforcements of orders required for the public service being with the magistrates or municipal authorities. It is confidently expected that a common feeling will give precedence to the branch of service specially needed on this occasion, and insure that unity of action which it is the main object of the rules and regulations issued herewith to authorize and promote for the common object.

"Experience has shown that, in the actual outbreak of the epidemic, the chief measures to be relied on for checking its spread, are those which prevent overcrowding, and the removal of persons from affected houses, and bringing the infected population under prompt and proper treatment during the premonitory stage of the disease. During the epidemic of 1849, an organization for effecting these objects was brought into operation, the main parts of which were the establishment of a house to house visitation, the opening of dispensaries and houses of refuge, in affected districts, for the reception of such indigent persons as appeared to be in imminent danger, residing in the most filthy and crowded houses, for the gratuitous supply of medicines, the establishment of houses of refuge for the reception of those who could not be properly treated at their own homes, and, in some instances, the supply of tents for the removal of the most susceptible and destitute classes to a distance from the infected localities. The result of this system was, that out of 130,000 premonitory cases brought under its operation, no fewer than 6000 of which were on the point of passing into the developed stage, only 250 went into the collapsed stage of cholera, or 1 in 520. But of the 43,737 under visitation in the metropolis, including 978 cases on the point of passing into the collapsed stage of cholera only 52 actually did so—not 1 in 800; so that, taking together the general result of this extended experience, it appears that the proportion of cases under early treatment, which passed from the premonitory into the developed stage, varied from 1 in 500 to 1 in 800.

"No doubt is now entertained of the efficacy of this system, or of the duty of local authorities to carry it into effect on the very first appearance of this disease in epidemic form; and as

none can tell when, or where, or how suddenly the pestilence may alight, it is the duty of local authorities to be prepared for the emergency before its arrival. Preparation will be attended with little cost; the power to act with promptitude and efficacy, when the necessity for action arises, will be attended with a great economy of money as well as of life.

"With reference to those precautions against the disease, which an individual may take for himself, or the heads of families or establishments for those under their charge, the most important are personal and household cleanliness, and the freest ventilation of living and sleeping-rooms with pure air; the purity of the air we breathe being even more essential than the wholesomeness of food and drink.

"When the disease has actually broken out and become epidemic in any district or locality, then the one essential precaution is not to neglect for a single hour any degree of looseness of the bowels. This symptom being commonly without pain, and so slight that it is difficult to conceive that it can be of the smallest consequence, naturally leads to neglect, and this neglect has cost the lives of thousands. Were any additional proof of this required, it would be found in the events that are now occurring at Gateshead; all the medical men there bear testimony that premonitory diarrhœa is all but universal, and that life depends on an instant attention to this symptom.

"Thus one physician says: 'He has never yet seen a case without premonitory symptoms.' Another states: 'He has found in a great number of instances, where the men said they had first been seized with collapse, there had been neglected diarrhœa for twenty-four hours, or even forty-eight hours, or longer.' Another declares: 'In all cases of collapse investigated, there has been neglected diarrhœa. Even in the cases in which death takes place with the greatest rapidity, the suddeness is apparent only, not real; for the fatal collapse is the final but gradual result of diarrhœa neglected for several hours, and sometimes entire days. It must, then, be repeated that, in any district in which the cholera is epidemic, life may depend on obtaining prompt and proper relief for painless and apparently trifling looseness of the bowels.'

"The measure of prevention next of importance relates to proper regulation of diet. Great moderation, both of food and drink, is absolutely essential to safety during the whole duration of the epidemic period; an act of indiscretion has been often followed by a severe attack; intemperance at such a time is fraught with the most extreme danger. During the epidemic of 1849, sudden and fatal attacks of the disease followed immediately on the indulgence of habits of drinking after the weekly receipts of weekly wages. The interval between the meals should not be long, cholera being uniformly found to prevail with extraordinary intensity among the classes that observe the protracted fasts common in some Eastern countries.

"The utmost practicable care should be taken against fatigue, which is a very powerful predisposing cause of the disease. Employers, and persons engaged in laborious employments, should endeavor, as far as possible, so to arrange the amount and time of work as to avoid physical exhaustion.

"Warm clothing is of great importance. During the present epidemic in Hamburg, it has been found that incautious exposure to cold or damp has brought on an attack as rapidly as improper food or excess. This precaution against damp is rendered doubly important by the peculiarity of the present season. Long-continued excessive rains have, in many places, surcharged the ground with moisture, especially undrained low-lying districts, placing, in many instances, the land contiguous to towns, and beyond the usual range of town drainage, almost in the condition of marshes. The exhalations arising from a surface thus saturated, often with water holding decomposed matter in solution, spread to the towns, and affected the inhabitants, however well drained the immediate sites of the town may be. The General Board were so apprehensive that disease would be extensively produced by this unusual and dangerous state of a large portion of the country (an apprehension which was subsequently realized by the breaking out of disease, allied in character to cholera, in sixty towns), that in their notification, issued in December, 1852, they represented to the local authorities that this calamity afforded a special occasion for administering extraordinary assistance to the poor, to enable

them to keep large fires in their rooms, to protect themselves from cold and damp by warm clothing, to sustain their strength by solid and nutritive diet, and to counteract the predisposition to the disease induced under these peculiar circumstances by suitable tonics, and other suitable remedies, under medical direction. This representation was made when there was a threatening of the return of cholera; it is now among us, and the General Board would remind the affluent that the opportune supply to their poorer neighbors and dependents of wholesome food, warm clothing and bedding, and even such remedies (to be always in readiness) as their medical attendant may recommend for looseness of the bowels, is charity in the truest sense, and may be the means of saving many lives. It is also much to be desired that the General Board would strongly recommend that the higher classes should co-operate with the clergy, who have done so much to promote the object of the legislature under the Public Health Act, in making frequent visits among the poor, and impressing upon them the importance of following the instructions here laid down, with reference to which there is a perfect accordance between the College of Physicians, and the General Board of Health.

"In conclusion, after the large experience which has been obtained since the General Board of Health issued their first notification (1848), they can now repeat, with greater confidence, what they then urged—that, formidable as this malady is in its intense form and developed stage, there is no disease against which it is in our power to take such effectual precaution, both as collective communities and private individuals, by attention to it in its first or premonitory stage, and by the removal of those agencies which are known to propagate the spread of all diseases, or, where that may be impracticable, by removal from them. Though, therefore, the issues of events are not in our hands, there is ground for hopes and even confidence in the sustained and resolute employment of the means of protection which experience and science have now placed within our reach."—*Medical News.*

REMARKS ON THE FOREGOING "NOTIFICATION."

Let us now briefly examine the principal subjects of this notification. It is asserted that cholera is not contagious; that it cannot be controlled by quarantine or other restrictive measures; that there precedes outbreaks of the intense stage of epidemic cholera, epidemic diarrhœas, which are the disease itself, in another stage of the malady; that in the primary stage the disease is easily and almost surely curable. Among the preventive means are public and personal purification and cleanliness, as well in household affairs as in wearing apparel; that no filth, or receptacles for filth or materials undergoing decomposition, which may give rise to noxious effluvia, should be allowed to remain; that no garbage or filth should be spread upon the ground; and that lime should be spread over such material as is hauled out in the neighborhood of cities.

The poor should be protected from the cold, especially dampness; in spells of cold weather fire should be used, and fuel given to the poor wherever they need it; the people should dress warmer than might be essential in other than cholera times; excesses and sudden changes are to be avoided. Fear, fatigue, nocturnal vigilance, potations of the ardent, and over-excitement should be avoided.

The rich should improve, oftener remove, and build new houses for the poor; as it will in the end be their interest to do. When there are signs of an outbreak, hospitals should be provided for the absolutely indigent, with every requisite in readiness for carrying the project into operation, so soon as the intense stage of the cholera makes its appearance. There should also, in the same good time, be a cholera dispensary, with the necessary physicians in readiness to enter upon their public duties, together with public apothecaries, so soon as there is clearly an epidemic disease present. Let the diet be reduced to a very simple kind, and diminished in amount. But, avoid making any changes too suddenly, unless at the juncture of a severe visitation.

Let the people occupy the higher grounds, on an out-

break of pestilence, and be removed from cellars; from low grounds that are especially under the choleraic influence, they should be removed, before it assumes the lethalic stage. Especial pains should be taken to admonish the people of all conditions, to have some prophylactic ready by which they may hope to stay the progress of the symptoms of cholera, till a physician can be brought to the case.

We have here given an epitome of the views, measures, and precautious of the English Board of Health, as set forth in their "notification," first published in 1848. And, if the reader will examine through that part of this work which treats upon the cause, nature, and measures of precaution, they will find that we adopted nearly all of the views of the English Board, and employed the same measures, in most of their details; all which is to be seen in the Medical Recorder, published in Baltimore, by us in 1832, since which time we have not seen occasion to change one important opinion or measure then employed. And, if we admit the views, &c., of the English Board, we may claim, as do that Board, having been instrumental in saving much expenditure of money, and, what is more important, saved many lives, and laid a foundation on which we must rest our present experience and knowledge of epidemic cholera.

We trust this claim, to having, in 1832, attained a position in relation to cholera which with our present knowledge we need not change, will not be considered as savoring too much of egotism. Our views have long been before a considerable part of American readers, and we are truly happy to have them espoused by the august Board of Health of England. The position here taken is not to be disputed, since our Journal was exchanged not only with Journals in this country, but also in London, Edinburgh, and other cities in Europe.

INFLUENCE OF COPPER WORKS ON CHOLERA, AS SEEN AT BALTIMORE.

Dr. William H. Baltzell, whose extensive practice in the south part of the city affords him opportunity for obtaining

correct knowledge for pointing out the true state of the case, has obligingly furnished us with the following notice of a well-marked influence, operating within limits so well defined, as to leave no room for doubt respecting the exemption of certain parts of the Federal Hill from cholera, even in its sporadic form, owing to the influence of copper suspended in the air.

On the south side of the basin or harbor there has been extensive copper works in operation for several years (from 1848 to 1854). Extensive smelting of the metal has filled the air with fumes of copper, to an extent to create, as was supposed, a nuisance; such as to lead to much complaint by the people within its influence. Less than a mile from these works is a considerable hill, sufficiently high to afford an excellent site for the flagstaff for shipping signals on the Baltimore station. This hill is in a position to be reached by winds from the south coming from the copper works; and this has been the most prevalent wind. The wind rising over the greatest elevation, and along either side of the hill, from some combination of things and circumstances, is found to spread as it courses onwards within an angle of about thirty-two degrees, and the odor of the copper fumes can be smelt for nearly two miles.

Within the space included in the described angle, there has never been a single case of cholera during the operation of the copper works, although the area in view includes the residence of several thousand citizens, of almost every sort. Last year there was a long continuance of south winds, during hot, dry weather, and yet the copper district was wholly exempt from cholera, while a considerable number of cases, amounting in some instances, just without the line, to an endemic, so that on the south side of the copper line, in some few houses, several persons died. And there died several horses and cows; the deaths of which could only be attributed to an impure atmosphere.

The case before us affords an interesting instance of the manner in which certain effluvia are carried abroad by the winds. We see here the wind being impregnated with the diffusible copper, and pressing on in one direction; the cop-

pered air as it advanced became more diffused; and there was a steadily diminished force by which alone can we explain the philosophy of the regular increased width of the angle. We shall not undertake to say how much influence the hill, in the way of the coppered wind exerts, but it is probable that the obstruction in the way has something to do with the spreading of the wind, and that the sanitary area in view would not be so broad at its west end, were it not for the influence of the hill; but the hill being in the way causes the wind to spread.

We will not theorize or speculate on our present subject, but surely the facts already noticed are in a high degree deserving of our attention. It is said in all diseases, "prevention is better than cure;" but in cholera the adage is tenfold more valuable, since prevention is our great purpose—a purpose to which every one in the medical profession and out of it, should take a deep interest. For it is as if some wild beast was let loose, and "seeking whom he may devour."

Let us seek for his haunts, and we shall find that, although his chariots are aerial, and their courses erratic, the poison of his nostrils is seen to come and go; and in his rambles he has preference for mud and mire, and crowded houses, and low places—has great love for drunkards and the high fed. He is a deep sleeper, and entails first a lethalic state, and afterwards the sleep of death upon his victims; the sluggard cannot climb, so neither can the cholera charioteer climb terrestrial heights. The cholera charioteer is robed in slipperiness and slime; heed him, watch him, and you can keep him, with God's blessing, at bay; but he is not at all times to be braved; he has his times to do, and his times not to do; but when he holds his gala days, naught but a guarded moderation in all things will turn aside his swift-flighted chariot of desolation and death.

It is as though he came armed with "fire and sword," and arrows to pierce, poison to sicken, screws to twist the nerves, massy weights to crush the muscles; the strong arms, and the wrists of washerwomen to wring out the fluids of the bowels; he comes with the propensities and the power of the vampire, to suck out your blood; he exerts the art of the collier, and fills your veins with charcoal—he shuts up normal

outlets, and makes sluices of those that should be shut. He would drench you in cold water, for which purpose he constructs your skin into a parchment sifter, that the fluids of your body shall escape—he is prepared like one who would pummel you into ecchymosis, to paint you black and blue. Amid all the riot, amid all the conflicting abnormal strife, there comes the heavy dream, the incubus of death; and he stuffs your brain with unvitalized blood, and sits sullen upon your power of thought; and here too, as a last stroke, he deposits the urea of your blood, and makes your own body poison fatally yourself.

SPECIAL OBSERVATIONS ON COLUMBIA.

We well recollect that when a small boy, how we stood in the door of our father's house at night, on his farm, near York, Pennsylvania, and saw with a degree of awe that seemed to raise erect the hair on our head, the thing called *will-with-a-wisp*, while we heard some domestic of the family relate frightful stories of persons having been led astray by attempting to approach one of these false lights—by receding as the lost wanderer drew nearer, the pursuer was decoyed into some ruin dire;—and now we think we see observers striving to lead the unwary in the quagmire of contagion.

There was a piece of meadow ground near the dwelling, low and inclining to swampiness. In damp weather a faint light was often seen to rest over a certain spot that was alluvial and rich; and we have seen that light increase in brightness, and pass, something like a meteor over a strip of meadow, say from 80 to 100 yards wide, and over bushes, not less than five or six feet high, and light up the dry leaves of the bushes, so that they could be seen as clearly as under the light of a good lamp. The spot under notice had once been a fish-dam, but there being three dams in a row, it was found that there was too much evaporation; and the middle one was either filled up, or suffered to fill up with the rain, and the upper

dam was applied to the use of water-fowl, and was called the duck dam. Within our earliest knowledge of these premises, the middle pond was filled up; but the duck dam was constantly used by considerable numbers of ducks and geese; and no doubt dead fish were consigned to slow decomposition about these ponds; and hence probably, the cause of the extraordinary amount of phosphorescent effluvium.

What do we recognize in this phenomenon? Here is a specimen of effluvium, which, if not quite tangible, is most clearly visible as a specimen of phosphorescent light. These phosphoric entities are usually stationary, and being diffused over a larger space, seem like spectres to recede as we pass into the illuminated air. It, of course, is only when there is close embodiment of this effluvium, that it is liable to be carried off by the winds, as we have seen in its illuminating the foliage of the bushes.

We have here a striking illustration of the nature of the circumstances at Columbia. We have elsewhere noticed the things present, from which we may well believe a large amount of a certain malaria had acquired embodiment, and floated over the face of the water; and this embodiment was the work of time; for weeks the usual material for the production of miasm had existed; but now, there must have been a sudden change, and in an evil hour there came a gale from the south, and blew directly towards and through the town; and that night twenty-four persons were poisoned to death; and twenty-five more were added the next twenty-four hours.

It requires no effort of the imagination to see how an effluvium may rise up, either suddenly or more slowly, and, like the phosphorescent effluvia, be carried by the winds from off the dam and settle long enough in the town to infect the citizens. For the present, we do not know the exact processes through which the cholera poison passes. Doubtless there is a period of incubation having preparatory stages, which we may suppose resembles a slow fermentation, which, having arrived at a certain stage, is suddenly matured, and poured forth by the winds; for, certain it is, that the highest intensity of this poison is of short duration; and in the outbreak under

notice, while the invasion was of the very highest intensity, its duration was one of the briefest.

We might here turn to the inquiry, how is it that while we can discern nothing new in respect to the things of the locality, and the material which is known to produce bilious fevers, suddenly we see a new disease of a more fatal potency? Let us see if we cannot illustrate this by a very simple chemical process, which we may see verified every day. The distiller puts together his *mash* of grain and barm, of a certain temperature and consistency,—in a few hours he has the product of alcohol ready to run off. This is the vinous fermentation; but let him neglect the distillation, and in a short time he has the acetous fermentation set up from the very same material. We offer this merely to show that the same materials, placed in different circumstances, may afford quite different products. It may be noticed here, that ozone is the most durable tenant of the malarious districts, while cholera-poison is a more irregular visitor, which, in small places, hardly makes its visits hebdomadal. What becomes of the infection, should we admit it to be an animal secretion? We have already examined this branch of our subject, and still consider it a matter of the very highest importance.

CONCENTRATED VIEW OF CHOLERA.

We have endeavored to present to view epidemic cholera in its various phases and habitudes, and we shall now attempt a condensation, or a more strict identification of the malady. We think proper, before we proceed to such identification, to offer a few remarks upon the physiology of certain parts, as seen under their peculiar impressibilities. We mean here the peculiarities which are to be seen in the sensibilities of the alimentary tube, (which might be termed the *elementary tube.*)

We once saw a young bear, who had slipped his chain and found his way to the kitchen, in the absence of the cook, and turned over a kettle in which a loaf of bread was baking, and

nearly done; and while the hot steam poured out of the bread, he tore off pieces of considerable size and swallowed several of them, amid the most terrific howlings, and only quiet when dragged off. From this he suffered no injury, as far as could be seen afterwards. On another occasion, we saw a lad, ten or twelve years of age, incautiously swallow a spoonful of hot cider-soup, which produced instantaneous syncope. He dropped from his seat; but soon revived, and made no further complaint. Whether he finished his meal, we do not recollect.

Every day we see what we might suppose to be likely to produce dangerous injuries to the tubular receptacle, by our swallowing things hot, and things cold, besides, things acrimonious, as pepper, mustard, brandies, &c.; and this limb of our good-natured dame, vis medicatrix naturæ, bears them with a wonderful degree of patience, but pressed too far, impairment will come, as every transgressor, sooner or later, is made to know. Now and then, the great tube is overpowered by the abuse of cold water, and sudden death is the forfeit.

Whatever difference we may see between the structure of the great reception tube and the aponeurotic and ligamentous structures, they have resemblance in this: that they have soundness of structure, with but little sensibility, compared to some other parts; but let them become inflamed, or into a high state of irritation, and they become sensitive and painful in the highest degree. We once attempted to overcome the inability to swallow liquids, in a case of tetanus, by passing a flexible tube into the stomach. The passing of the tube was in the highest possible degree painful, and the injection of a little fluid seeming like pouring in melted lead. The tube had to be withdrawn in haste, owing to the indescribable suffering of the patient. She died in a few hours; but we had not an opportunity of examining the body, yet we feel confident there was no inflammation in this case.

We have elsewhere contended that cholera is the product of a new modification of electricity. This electric entity is seen to assail the primæ viæ with insalubrious secretions, as must be the case wherever the nervous influence is impaired, and diarrhœa and dysenteric symptoms appear epidemically. While

this state of things continues, we see cases where the nerves of nutrition are obviously in a condition of morbid sensitiveness; and we now and then see, that things quite innocent in themselves, coming into contact with the inner coat of the stomach or bowels, give rise to agonizing pain; and now, as if a train of morbid influences had been laid, the entire system is found to be morbidly impressed.

In one individual we have wasting discharges from the tubular centre, upwards and downwards—oftenest the latter. In another, there is agonizing spasms. In another, a death-like debility; distressing chills; lividity of more or less of the surface of the body; painful tension at the præcordia. Amid all this, there is general lethargy, and hence the term cholera lethalis. After suffering more or less of these symptoms of the disease, the patient dies, and we are now introduced to our pathology.

We find universal congestion, or rather stagnation; the blood is found where it should not be, and where it should be, it is not, and wherever it is found, it is spoiled; charcoal has the place of oxygen; membranes are mottled by turgescence, or blanched by the abstraction of blood; the brain is soaking in carbonized blood, and there is general lethargy. We go to the base of the brain, and there we find heavy effusion of serum; we may see traces of the same through the theca of the spinal brain, even to the cauda equina (see dissections at Moscow). Look at the skin, and you might almost imagine you have an Ethiopian. See the fingers clenched, and the limbs rigid, and sometimes exhibiting muscular action. With a picture like this before us (and this is no exaggeration), we may well say, from the crown of the head to the sole of the foot, there is naught but deleteriousness, and wherever the general lethargy is established, we have mostly the forebode of death.

As pathologists in cholera, our track in pursuit of things abnormal bears likeness to a circle, and we know not where to begin our inquiries; but we think, as well from the universal devastation of parts, as from the earlier phenomena attending the disease, we may reasonably ascribe the course of the malady to a gradual impairment in the nervous power—origi-

nating in the great splanchnic system, for here it is we first see signs of disease.

We have seen that notwithstanding the wonderful endowments of the alimentary tube, including the stomach, by which it bears much, that it is liable to be impressed with the highest possible irritation, so that in a choleraic season, an innocent article taken into the stomach may give rise to cholera, which shall assume its highest intensity, as respects sufferings, in a few minutes.

Here seems to be the place of incubation; the terminal ends of the nervous fibres are at fault; the process of assimilation under their special keeping are performed imperfectly; and eventually all the assimilating organs come into the fault of function, and now there is a new and disordered condition of affinities.

There is in the end one universal disorder, and it is in vain to look to the pathology of cholera to find the seat of the disease; its location is co-extensive with the limits of the individual form; the sensorium is co-extensive with the form of the man. The pathologist, in quest of the seat of cholera, is like one who finds the old clothes of a person who has run away. We are reminded here of the idea expressed somewhere by Darwin, that the sensorial organs are co-extensive with the form of the man. Every one is aware of the nearly uniform fact of epidemic diarrhœa preceding epidemic cholera; and it is but reasonable to insist here, that all the abdominal viscera are involved in the derangement of function. These diarrhœas are sometimes unattended by pain, but there is an abnormal condition of all the chylopoietic viscera, and the readiness with which such diseases are cured, is proof positive that the maternal cause exerts but a feeble noxious power on the system; and it is quite probable that the parasitic cause gives the destructive intensity to the disease. Indeed, it is hard to conceive of any other condition of things than this plan of co-operation. Look at the extension of cholera, at its numerous appearances, and then at its temporary outbreaks, and how shall we explain these phenomena by any single agency?

But we are chiefly anxious to establish the truth, that cholera has its place of incubation in the abdominal viscera; and that incubation consists in insalubrious secretions. This we see to be the case in ordinary diarrhœas and dysenteries; and in bilious fevers. What then has been our experience in relation to those other affections? Our universal practical experience has been to treat these affections by remedies suited to the discharge of offending viscous secretions, and to establish a more sanitary secreting condition of the abdominal viscera in particular. Here comes to our aid the curative potency of such excitants as will aid the living organs to expel things noxious, and give normal impulses to the oppressed viscera.

Here it seems necessary to go to the atomic entities of the body, and bring to view the process of perpetual renewal of the living structures, atomically, organically, and systemic. Atoms here are appliances, and have plasmatic, and eliminative qualities associated with motivity. Health consists in the regular operations of these infinitesimal entities.

Looking at some great glandular structure, we see membranes, nerves, and parenchyma, &c., each has its own atomic entities; and each has its own function. Here we see a sort of substructure; and from this substructure there proceeds appliances for the use of other parts, as seen in the parotid gland, which sends its product to the stomach. There are other functions of elimination, as seen in the action of the kidneys. This part of our subject might be extended to great length; but we think we have said enough to convey our meaning, and now for a brief application.

We know that certain articles when taken into the stomach will produce emesis—that others will purge. Others again will act as sudorifics, diuretics, &c., &c. These phenomena are obvious to all persons, but there are other phenomena which, though less visible to the unlearned, are as well known to physicians as anything belonging to the science of medicine. We will only notice the influence of mercury over the lymphatic system; and we see with evident clearness this article and others, exerting a power over the biliary secretion, and over the abdominal viscera generally.

The prelude to cholera is a fault of function in the abdominal viscera, as manifested in the epidemic diarrhœas that precede cholera lethalis. What is the most rational indication? We say the most rational indication is to arrest the incubating tendencies, which is to be done by correcting the vicious secretions. But how is this to be done?

1st. The terminal nerves on the surface of the stomach are in a state of increased and morbid sensitiveness. Opium would seem to be the antidote here, but we find in the early stages, or mild cases, carminatives, as soda and sassafras, camphor, chloroform, cold water, ice, &c., will arrest the diarrhœa; and, this may be ascribed to these articles bringing the nervous influence, so to speak, to its senses; and, doing its more normal part in the atomic, plastic, and eliminative functions, which are now brought into healthful play; and we have restored the secretion.

2d. Whenever the nervous structures are highly sensitive, and there is agonizing pains about the præcordia, or violent or general spasms, we shall find the fault of function more deeply laid; and here we must combine our soothing agent with one that will influence the fault of assimilation in the atomics; for this purpose calomel and opium are the most reliable agents.

3d. Is there profuse discharges upwards and downwards, which will speedily prostrate the general system,—four or five grains of opium, given according to the urgency of the case, at one, two, or three doses; never at longer intervals than one or two hours, if given at the commencement of the lethargic stage (as seen in listlessness, weak voice, indifference, &c.), will arrest the diarrhœa, and we have now time to attend to the urinary secretion; and for this purpose eight or ten grain doses of nitrate pot. combined with five or ten grain doses of calomel, should there seem to be deep-laid atomic aberration.

4th. Cases occur where, after eating, and sometimes from over exertion, &c., persons are brought into one blazing agony of suffering; here the lancet is the remedy; and, for its successful application, bleeding must be carried on till there is complete relief from pain, and a more florid appearance of the blood.

5th. While internal remedies are employed, the application of hogslard will be found an important remedy; a cup of hot water can be carried to the bedside, with a small one in the water and the lard in the small cup, will be found a convenient way of applying it: the patient being wiped dry, is to be freely rubbed with the lard. We have elsewhere treated fully of the treatment of cholera, but we have thought proper to say thus much, by which we hope to show the reader that according to the different phases, stages, and circumstances, remedies are to be individually applied. But we have deemed it a special duty to advise, that, according to our observations and experience, seasons modify epidemic diseases; and, by especial attention to this truth, at the beginning of an epidemic, we may soon establish a preferable treatment, and then manage our cases with comparative satisfaction to ourselves and to the greater safety of our patients.

6th. The vast number of remedies that have obtained celebrity for the cure of cholera, and the readiness with which it is seen to yield to remedies, in its early stages; and, now and then in cases more profound, goes to establish the belief, that the predisposing cause is but a feeble poison; and, experience abundantly proves, that precautions, and mild prophylactics are much to be relied on.

Dr. Rush once said to us, the reverse of *quod cito fit cito perit*, is true in medicine; but in the treatment of cholera lethalis, what we do, we must do quickly, or decomposition of the blood will lead to the grave.

THE END.

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